

	Invitation For Bid 10-426 Nominal 114-ft. Articulating Aerial Platform Type Fire Apparatus Fire Department Issued: September 2, 2010	City of Tulsa, Oklahoma <small>Page 1 of 60</small>
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NOTICE is hereby given that the CITY OF TULSA, OKLAHOMA will receive sealed Bids for the following:

BID # 10-426

DESCRIPTION: **Nominal 114-ft. Articulating Aerial Platform Type Fire Apparatus** (Commodity Code(s): 070-57)

You are invited to submit a Bid to supply the Goods and/or Services specified above. Invitations for Bid (IFB) will be posted on the City's website at www.cityoftulsapurchasing.org or a hardcopy may be obtained at:

City of Tulsa-Purchasing Department
175 East 2nd Street, Suite 865
Tulsa Oklahoma 74103

Bids must be received no later than 5:00 PM (CST) on Wednesday October 13, 2010, and delivered to:
City Clerk's Office
175 East 2nd Street, Suite 260
Tulsa Oklahoma 74103

Bids must be sealed and either mailed or delivered. No faxed or emailed Bids will be considered. Bids received after the stated date and time **will not be accepted and will be returned to the Bidder unopened.**

The Bid Packet consists of (1) this Notice of Invitation for Bid, (2) the Summary Sheet, (3) Form #1, (4) Form #2, (5) Form #3, (6) Form #4, (7) Form #5, (8) Form #6, (9) the Instructions, Terms and Conditions for Bidders, (10) Special Requirements, (11) Technical Specifications and (12) Exhibit A.

Use this checklist to ensure you have properly read and completed all Forms.

- _____ Notice of Invitation for Bid
- _____ Summary Sheet
- _____ Form #1: Bidder Information Sheet. Must be completed.
- _____ Form #2: Purchase Agreement. **Complete legal name in first paragraph and Notice provision in Section 17.i. Original signature required.**
- _____ Form #3: Interest Affidavit. Original signature and notarization required.
- _____ Form #4: Non-Collusion Affidavit. Original signature and notarization required.
- _____ Form #5: Affidavit of Claimant. Original signature and notarization required.
- _____ Form #6: Acknowledgment of Receipt of Addenda/Amendments. Must be completed and signed.
- _____ Instructions, Terms and Conditions for Bidders
- _____ Special Requirements (Offer Period; Insurance and Bonding; References)
- _____ Technical Specifications
- _____ Exhibit A: Bid Form including Delivery and Pricing. This is your Bid. It must be completed or your Bid will be rejected.

IMPORTANT NOTE: Write the Bid Number, Bid Description (as listed above), and Bid Opening Date on the lower left corner of the outside of your Bid envelope. You must return the complete Bid Packet with your Bid.

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SUMMARY SHEET

Project Buyer

If you have any questions or need additional information, contact the assigned Project Buyer:

Bill Youngblood, CPM Senior Buyer

byoungblood@cityoftulsa.org

Include **IFB 10-426** on the subject line

Bidder's Notice of Intent to Submit a Bid

Email the Project Buyer indicating your intent to Bid. Include IFB **10-426** on the subject line of the email. You will receive an email response verifying your notice of intent to bid was received. This same procedure should be followed to request clarification, in writing, of any point in the IFB.

Bidders are encouraged to contact the Project Buyer by email if there is anything in these specifications that prevents you from submitting a Bid, or completing the Bid Packet. Questions and concerns must be received no later than seven (7) days prior to the Bid Packet due date.

Issuing of Addenda

If you received the notice of this IFB from the City as a result of being registered to sell the commodity code(s) on this Bid, you should also receive notice of any addenda issued. If you are not registered with the City to sell the commodities listed herein, you must register as a supplier on the City of Tulsa Purchasing website (www.cityoftulsapurchasing.org) to receive notice of any addenda.

Pre-Bid Conference

If a pre-Bid conference will be held for this IFB, information on that conference will be inserted below:

Date: September 22, 2010 Time: 1:30 PM

Location: City Hall; 175 E. 2nd Street, Ste 08-026 (Information Exchange); Tulsa, Ok 74103

Attendance at the mandatory Pre-Bid Conference is required to submit a Bid; however Bidders may make arrangements to attend via teleconference in some cases (contact the Project Buyer (byoungblood@cityoftulsa.org) for details).

Attendance is not required to submit a Bid.

Bid Packet Submission

The City requires two completed Bid packets: 1 Original and 1 Copy. Each must be clearly labeled on the front sheet indicating "Original" or "Copy". If a copy on electronic media is also required, the line below will be checked.

Electronic Copy also required.

Responses to this Invitation for Bid must be on the forms listed on page 1. The entire Bid Packet must be returned or your Bid may be rejected. Do not take exception to any portion of this Bid Packet. Do not make any entries except where required. Do not insert any other documents into the Bid Packet.

Bid Opening

All Bid openings are public and take place at 8:30 a.m. Thursday, the day after Bids are due. The Bid openings are held in the City of Tulsa Council Meeting Room, 175 East 2nd Street, 2nd Floor, Tulsa, Oklahoma.

**BIDDER INFORMATION SHEET
Form #1**

Bidder's Exact Legal Name: _____
 (Must be Bidder's company name as reflected on its organizational documents, i.e., not a DBA)

State of Organization: _____

Bidder's Type of Legal Entity: (check one)

- | | |
|--|--|
| <input type="checkbox"/> Sole Proprietorship | <input type="checkbox"/> Limited Liability Company |
| <input type="checkbox"/> Partnership | <input type="checkbox"/> Limited Liability Partnership |
| <input type="checkbox"/> Corporation | |
| <input type="checkbox"/> Limited Partnership | <input type="checkbox"/> Other: _____ |

Bidder's Address: _____

Street
City
State
Zip Code

Bidder's Website Address: _____ **Email Address:** _____

Sales contact:

Name: _____
 Street: _____
 City: _____
 State: _____
 Phone: _____
 Fax: _____
 Email: _____

Alternate sales contact:

Name: _____
 Street: _____
 City: _____
 State: _____
 Phone: _____
 Fax: _____
 Email: _____

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FORM #2 (Page 1 of 4)
PURCHASE AGREEMENT

INSTRUCTIONS: This document **must** be properly signed and returned or your Bid will be **rejected**. This form constitutes your offer and if accepted by the City of Tulsa will constitute the Purchase Agreement under which you are obligated to perform. Your signature on this document indicates you have read and understand these terms and agree to be bound by them.

THIS PURCHASE AGREEMENT is between the CITY OF TULSA, OKLAHOMA, a municipal corporation, 175 East 2nd Street, Tulsa, Oklahoma, 74103-3827 (the "City") and:

(Company name – **Must** be the **exact** legal name as shown in organizational documents (i.e., not a DBA) (the "Seller").

WITNESSETH:

WHEREAS, the City has approved certain specifications and advertised for or solicited Bids on the following goods or services:

10-426 Nominal 114-ft. Articulating Aerial Platform Type Fire Apparatus

(the "Goods and/or Services"); and

WHEREAS, Seller desires to provide such Goods and/or Services to City, acknowledges that this document constitutes Seller's offer to provide the Goods and/or Services specified below, and further acknowledges that if executed by the City's Mayor, this document will become the Purchase Agreement for such Goods and/or Services.

NOW, THEREFORE, for and in consideration of the terms, covenants and conditions hereinafter set forth, the parties hereto agree as follows:

1. **Documents Comprising the Agreement.** The Bid Packet includes the Notice of Invitation to Bid, the Summary Sheet, Form #1, Form #2, Form #3, Form #4, Form #5, Form #6, the Instructions, Terms and Conditions for Bidders, the Special Requirements, the Technical Specifications, Exhibit A and any addenda or amendments to the Bid Packet. The Bid Packet is incorporated herein by this reference. In the event of conflicting or ambiguous language between this Purchase Agreement and any of the other Bid Packet documents, the parties shall be governed first according to this Purchase Agreement and second according to the remainder of the documents included in the Bid Packet. Seller may submit as part of its Bid additional materials or information to support the Bid. Additional materials or information submitted by Seller which are not ambiguous and which do not conflict with this Purchase Agreement or the other Bid Packet documents are incorporated herein by this reference.
2. **Purchase and Sale.** Seller agrees to sell City the Goods and/or Services for the price and upon the delivery terms set forth in Exhibit A hereto. City agrees to pay Seller the price as set forth in Exhibit A based on (a) the quantity actually purchased in the case of goods or services priced by unit, or (b) the total price for a stated quantity of goods or services, upon (i) delivery of the Goods and/or Services to the City, (ii) the City's Acceptance thereof, and (iii) Seller's submission and City's approval of a verified claim for the amount due. City shall not pay any late charges or fees.
3. **Irrevocable Offer.** Seller understands and acknowledges that its signature on this Agreement constitutes an irrevocable offer to provide the Goods and/or Services. There is no contract unless and until City's Mayor/Mayor Pro Tem executes this Agreement accepting Seller's Bid. No City officer, employee or agent except the Mayor (or Mayor Pro Tem) has the authority to award contracts or legally obligate the City to any contract. Seller shall not provide any Goods and/or Services to City pursuant to this Agreement before this Agreement is executed by City. If Seller provides any Goods and/or Services to City pursuant to this Agreement before this Agreement is executed by City, such Goods and/or Services are provided at Seller's risk and City shall have no obligation to pay for any such Goods and/or Services.
4. **Term.** The term of this Agreement shall be effective commencing on the date of execution of this Agreement by the Mayor/Mayor Pro Tem of the City of Tulsa and terminating one year from that date, **or shall be effective on [month][day], 20__ and continuing to [month][day], 20__ at the discretion of City.** City in its sole discretion may offer Seller an opportunity to renew this Agreement for an **additional** two(2) one (1) year term(s). Seller understands and acknowledges that any future contracts or renewals are neither automatic nor implied by this Agreement. The continuing purchase by City of the Goods and/or Services set forth in this Agreement is subject to City's needs and to City's annual appropriation of sufficient funds in City's fiscal year (July 1st to June 30th) in which such Goods and/or Services are purchased. In the event City does not appropriate or budget sufficient funds to perform this Agreement, this Agreement shall be null and void without further action by City.
5. **Warranties.** Seller shall assure that the Goods and/or Services purchased hereunder are covered by all available and applicable manufacturers' warranties for such Goods and/or Services. Seller expressly agrees that it will be responsible for performing all warranty obligations set forth in the Special Requirements for the Goods and/or Services covered in this Agreement. Seller also warrants that the Goods and/or Services will conform to the Technical Specifications and Special Requirements, and further warrants that the Goods and/or Services shall be of good materials and workmanship and free from defects for either a minimum of one (1) year from the date of Acceptance or installation by City, whichever is later, or as **specified in the Special Requirements**, whichever is later. In no event shall Seller be allowed to disclaim or otherwise limit the express warranties set forth herein.
6. **Warranty Remedies.** City shall notify Seller if any of the Goods and/or Services fails to meet the warranties set forth above, and Seller shall promptly correct, repair or replace such Goods and/or Services at Seller's sole expense. Notwithstanding the foregoing, if such Goods and/or Services shall be determined by City to be defective or non-conforming within the first thirty (30) days after the date of Acceptance by City, then City at its option shall be entitled to a complete refund of the purchase price and, in the case of Goods, shall promptly return such Goods to Seller. Seller shall pay all expenses related to the return of such Goods to Seller.

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PURCHASE AGREEMENT

7. **Seller Bears Risk.** The risk of loss or damage shall be borne by Seller at all times until the Acceptance of the Goods or Services by City.
8. **No Indemnification by City.** Seller understands and acknowledges that City is a municipal corporation that is funded by its taxpayers to operate for the benefit of its citizens. Accordingly, and pursuant to Oklahoma law, City shall not indemnify nor hold Seller harmless for loss, damage, expense or liability arising from or related to this Agreement, including any attorneys' fees and costs. In addition, Seller shall not limit its liability to City for actual loss or direct damages for any claim based on a material breach of this Agreement and the documents incorporated herein. City reserves the right to pursue all legal and equitable remedies to which it may be entitled.
9. **Indemnification by Seller.** Seller agrees to indemnify, defend, and save harmless City and its officers, employees and agents from all suits and actions of any nature brought against them due to the use of patented appliances, products or processes provided by Seller hereunder. Seller shall pay all royalties and charges incident to such patents.
10. **No Insurance by City.** If City is leasing Goods herein, City shall not be required to obtain insurance for Seller's property. Seller shall be solely responsible for any insurance it deems necessary. City is self-insured for its own negligence, subject to the limits of the Governmental Tort Claims Act (51 O.S. § 151 et seq.).
11. **No Confidentiality.** Seller understands and acknowledges that City is subject to the Oklahoma Open Records Act (51 O.S. §24A.1 et seq.) and therefore cannot assure the confidentiality of contract terms or other information provided by Seller pursuant to this Agreement that would be inconsistent with City's compliance with its statutory requirements thereunder.
12. **Non-Responsive Bids.** Seller understands and acknowledges that if it adds terms and conditions to its Bid that are different from the terms set forth herein that its Bid may be rejected as non-responsive. Furthermore, if City accepts Seller's Bid and awards a contract to Seller based on such Bid, City shall not be bound to any exceptions, changes or additions made by Seller, and any terms and conditions added by Seller which are not expressly agreed to by City in writing will be void and of no force and effect and the parties will be governed according to the document precedence set forth in Section 1 above.
13. **Compliance with Laws.** Seller shall be responsible for complying with all applicable federal, state and local laws, regulations and standards. Seller is responsible for any costs of such compliance.
14. **Termination.** City, by written notice, may terminate this Agreement, in whole or in part, when such action is in the best interest of City. If this Agreement is so terminated, City shall be liable only for payment for Goods accepted and Services rendered prior to the effective date of termination. City's right to terminate this Agreement is cumulative to any other rights and remedies provided by law or by this Agreement.
15. **Price Changes.** The parties understand and agree that the variables in Seller's cost of performance may fluctuate, but any change in Seller's cost of performance will not alter its obligations under this Agreement, nor excuse performance or delay on Seller's part. If the IFB provides that Seller may include a price escalation provision in its Bid, Seller's price escalation provision will be evaluated by City as part of Seller's Bid price when awarding the Bid.
16. **Right to Audit.** The parties agree that Seller's books, records, documents, accounting procedures, practices, price lists or any other items related to the Goods and/or Services provided hereunder are subject to inspection, examination, and copying by City or its designees. Seller is required to retain all records related to this Agreement for the duration of the term of this Agreement and a period of three years following completion and/or termination of the Agreement. If an audit, litigation or other action involving such records begins before the end of the three year period, the records shall be maintained for three years after the date that all issues arising out of the action are resolved or until the end of the three year retention period, whichever is later.
17. **Notice.** Any notice, demand, or request required by or made pursuant to this Agreement shall be deemed properly made if personally delivered in writing or deposited in the United States mail, postage prepaid, to the addresses specified below.

i. To Seller: _____

ii. To CITY: City Clerk
 CITY OF TULSA, OKLAHOMA
 175 E. 2nd Street, Suite 260
 Tulsa, Oklahoma 74103

With a copy to: Bill Youngblood, CPM Senior Buyer _____
 CITY OF TULSA, OKLAHOMA
 175 E. 2nd Street, Suite 865
 Tulsa, Oklahoma 74103

18. **Relationship of Parties.** The Seller is, and shall remain at all times, an independent contractor with respect to activities and conduct while engaged in the performance of services for the City under this Agreement. No employees, subcontractors or agents of the Seller shall be deemed to be employees of the City for any purpose whatsoever, and none shall be eligible to participate in any benefit program provided

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PURCHASE AGREEMENT

by the City for its employees. The Seller shall be solely responsible for the payment of all employee wages and salaries, taxes, withholding payments, fringe benefits, insurance premiums, continuing education courses, materials or related expenses on behalf of its employees, subcontractors, and agents. Nothing in this Agreement shall be construed to create a partnership, joint venture, or agency relationship among the parties. No party shall have any right, power or authority to act as a legal representative of another party, and no party shall have any power to obligate or bind another party, or to make any representations, express or implied, on behalf of or in the name of the other in any manner or for any purpose whatsoever.

19. **Third Parties.** This Agreement is between City and Seller and creates no right unto or duties to any other person. No person is or shall be deemed a third party beneficiary of this Agreement.
20. **Time of Essence.** City and Seller agree that time is deemed to be of the essence with respect to this Agreement.
21. **Binding Effect.** This Agreement shall be binding upon City and Seller and their respective successors, heirs, legal representatives and permitted assigns.
22. **Headings.** The headings used herein are for convenience only and shall not be used in interpreting this Agreement
23. **Severability Provision.** If any term or provision herein is determined to be illegal or unenforceable, the remainder of this Agreement will not be affected thereby. It is the intention of the parties that if any provision is held to be illegal, invalid or unenforceable, there will be added in lieu thereof a provision as similar in terms to such provision as is possible to be legal, valid and enforceable.
24. **Governing Law And Venue.** This Agreement is executed in and shall be governed by and construed in accordance with the laws of the State of Oklahoma without regard to its choice of law principles, which shall be the forum for any lawsuits arising under this Agreement or incident thereto. The parties stipulate that venue is proper in a court of competent jurisdiction in Tulsa County, Oklahoma and each party waives any objection to such venue. City does not and will not agree to binding arbitration of any disputes.
25. **No Waiver.** A waiver of any breach of any provision of this Agreement shall not constitute or operate as a waiver of any other provision, nor shall any failure to enforce any provision hereof operate as a waiver of the enforcement of such provision or any other provision.
26. **Entire Agreement/No Assignment.** This Agreement and any documents incorporated herein constitute the entire agreement of the parties and supersede any and all prior agreements, oral or otherwise. This Agreement may only be modified or amended in a writing signed by both parties. Notwithstanding anything to the contrary stated herein or in the attachments to this Agreement, no future agreements, revisions or modifications that may be required under this Agreement are effective or enforceable unless such terms, revisions or modifications have been reduced to writing and signed by City and Seller. Seller may not assign this Agreement or use subcontractors to provide the Goods and/or Services without City's prior written consent. Seller shall not be entitled to any claim for extras of any kind or nature.
27. **Multiple Counterparts.** This Agreement may be executed in several counterparts, each of which shall be deemed an original, but which together shall constitute one and the same instrument.
28. **Interpretive Matters and Definitions.** The following interpretive matters shall be applicable to this Agreement:
 - 28.1 Unless the context otherwise requires: (a) all references to Sections are to Sections of or to this Agreement; (b) each term defined in this Agreement has the meaning assigned to it; (c) "or" is disjunctive but not necessarily exclusive; (d) words in a singular include the plural and vice versa. All references to "\$" or to dollar amounts shall be in lawful currency of the United States of America;
 - 28.2 No provision of this Agreement will be interpreted in favor of, or against, any of the parties hereto by reason of the extent to which such party or its counsel participated in the drafting thereof or by reason of the extent to which any such provision is inconsistent with any prior draft hereof or thereof;
 - 28.3 Any reference to any applicable laws shall be deemed to refer to all rules and regulations promulgated thereunder and judicial interpretations thereof, unless the context requires otherwise;
 - 28.4 The word "including" means "including, without limitation" and does not limit the preceding words or terms; and
 - 28.5 All words used in this Agreement shall be construed to be of such gender, number or tense as circumstances require.
29. **Authority to Bind.** The undersigned individual states that s/he has authority to bind Seller to this Agreement, that s/he has read and understands the terms of this Agreement, and that Seller agrees to be bound by this Agreement and its incorporated documents.

REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

**FORM #2 (Page 4 of 4)
PURCHASE AGREEMENT**

IMPORTANT NOTE: This document must be signed by the proper person as set forth in Instructions, Terms and Conditions for Bidders, paragraph 2D FAILURE TO SUBMIT PROPERLY AUTHORIZED SIGNATURE MAY RESULT IN YOUR BID BEING REJECTED AS NONRESPONSIVE.

IN WITNESS WHEREOF, this Agreement has been executed in multiple copies on the dates set forth below to be effective during the period recited above.

Seller Name: _____

Sign Here ► _____

ATTEST:

Printed Name: _____

Title: _____

Corporate Secretary

Date: _____

Company Name/Address [Please Print]	Address	City	State	Zip Code
() -	() -	Email Address		
Telephone Number	Fax Number			

**CITY OF TULSA, OKLAHOMA,
a municipal corporation,**

ATTEST:

By: _____
Mayor

City Clerk

Date: _____

APPROVED:

Assistant City Attorney

FORM #4 (Page 1 of 1)
NON-COLLUSION AFFIDAVIT

(Required by Oklahoma law, 74 O.S. §85.22-85.25)

STATE OF _____)
)ss.
 COUNTY OF _____)

I, _____, of lawful age, being first duly sworn, state that:
 (Seller's Authorized Agent)

1. I am the authorized agent of Seller herein for the purposes of certifying facts pertaining to the existence of collusion between and among Bidders and municipal officials or employees, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the letting of any contract pursuant to the Bid to which this statement is attached.
2. I am fully aware of the facts and circumstances surrounding the making of Seller's Bid to which this statement is attached, and I have been personally and directly involved in the proceedings leading to the submission of such Bid; and
3. Neither the Seller nor anyone subject to the Seller's direction or control has been a party:
 - a. to any collusion among Bidders in restraint of freedom of competition by agreement to Bid at a fixed price or to refrain from Bidding,
 - b. to any collusion with any municipal official or employee as to quantity, quality, or price in the prospective contract, or as to any other terms of such prospective contract, nor
 - c. in any discussions between Bidders and any municipal official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

By: _____
 Signature

Title: _____

Subscribed and sworn to before me this _____ day of _____, 20_____.

 Notary Public

My Commission Expires: _____

Notary Commission Number: _____

County & State Where Notarized: _____

The Affidavit must be signed by an authorized agent and notarized

FORM #5 (Page 1 of 1)

AFFIDAVIT OF CLAIMANT

STATE OF _____)
)ss.
 COUNTY OF _____)

The undersigned person, of lawful age, being first duly sworn on oath, says that all invoices to be submitted pursuant to this agreement with the City of Tulsa will be true and correct. Affiant further states that the work, services or material furnished will be completed or supplied in accordance with the plans, specifications, orders, requests and/or contract furnished or executed by the affiant. Affiant further states that (s)he has made no payment directly or indirectly to any elected official, officer or employee of the City of Tulsa or of any public trust where the City of Tulsa is a beneficiary, of money or any other thing of value to obtain payment of the invoice or procure the contract or purchase order pursuant to which an invoice is submitted. Affiant further certifies that (s)he has complied with all applicable laws regarding equal employment opportunity.

Company: _____

Remit to
Address: _____

City, State
Zip: _____

Phone: _____

Name (print): _____

Signature: _____

Title: _____

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My commission expires: _____
 My commission number: _____
 County and State where notarized: _____

The Affidavit must be signed by an authorized agent and notarized

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FORM #6 (PAGE 1 OF 1)
ACKNOWLEDGMENT OF RECEIPT OF ADDENDA/AMENDMENTS

I hereby acknowledge receipt of the following addenda or amendments, and understand that such addenda or amendments are incorporated into the Bid Packet and will become a part of any resulting contract.

List Date and Title/Number of all addenda or amendments: (Write "None" if applicable).

Sign Here ► _____

Printed Name: _____

Title: _____

Date: _____

INSTRUCTIONS, TERMS AND CONDITIONS FOR BIDDERS
(Page 1 of 4)

1. **PURCHASING AUTHORITY.** City issues this Invitation For Bid pursuant to Tulsa City Charter, Art. XII, §14 and Tulsa Revised Ordinances, Title 6, Ch. 4, the provisions of which are incorporated herein.
2. **DEFINITIONS.** The following terms have the following meanings when used in the documents comprising this Bid Packet.
 - A. **"Acceptance"** with respect to a Bid shall mean the City's selection of a Bid, and award of a contract to the Bidder/Seller.
 - B. **"Acceptance"** with respect to delivery of Goods and/or Services provided under a Purchase Agreement shall mean City's written acknowledgement that Seller has satisfactorily provided such Goods and/or Services as required.
 - C. **"Addenda" "Addendum" or "Amendment(s)"** shall mean a clarification, revision, addition, or deletion to this Invitation For Bid by City which shall become a part of the agreement between the parties.
 - D. **"Authorized Agent"** means an agent who is legally authorized to bind the Seller under the law of the State in which the Seller is legally organized. An Authorized Agent must sign all documents in the Bid Packet on behalf of the Seller. Under Oklahoma law, the Authorized Agent for each of the following types of entities is as stated below:
 - **Corporations** – the president, vice president, board chair or board vice chair can sign; others can sign if they have and provide the City with (i) a corporate resolution giving them authority to bind the Seller, and (ii) a recent corporate secretary's certificate indicating the authority is still valid.
 - **General Partnerships** – any partner can sign to bind all partners.
 - **Limited Partnerships** – the general partner must sign.
 - **Individuals** – no additional authorization is required, but signatures must be witnessed and notarized.
 - **Sole Proprietorship** – the owner can sign. Any other person can sign if s/he provides a recent Power of Attorney, signed by the owner, authorizing him/her to bind the sole proprietorship.
 - **Limited Liability Company (LLC)** – The manager as named in the Operating Agreement can sign. Any person authorized by the Operating Agreement or a member can sign providing the person submits a copy of the authorization with a certificate of the members indicating the authorization is still valid.Entities organized in States other than Oklahoma must follow the law of the State in which they are organized.
 - E. **"Bid"** means the Seller's offer to provide the requested Goods and/or Services set forth in Exhibit A and any additional materials or information the Seller chooses to submit to support the Bid.
 - F. **"Bidder"** means the legal entity which submits a Bid for consideration by City in accordance with the Invitation For Bid.
 - G. **"Bid Packet"** consists of the following documents (1) the Notice of Invitation for Bid, (2) the Summary Sheet, (3) Form #1, (4) Form #2, (5) Form #3, (6) Form #4, (7) Form #5, (8) Form #6, (9) the Instructions, Terms and Conditions for Bidders, (10) Special Requirements, (11) Technical Specifications, and (12) Exhibit A.
 - H. **"Bid Submission Date"** shall mean the last date by which the City will accept Bids for an Invitation For Bid.
 - I. **"City"** shall mean the City of Tulsa, Oklahoma.
 - J. **"Days"** shall mean calendar days unless specified otherwise.
 - K. **"Primary Seller"** shall mean the Seller whose Bid City selected as the principal supplier of the Goods and/or Services required under this Agreement.
 - L. **"Project Buyer"** shall mean the City's employee assigned to serve as the contact person for Bidders/Sellers responding to Invitations For Bid or completing contracts herein.
 - M. **"Purchasing Division or Office"** shall mean the City of Tulsa's Purchasing Division, located at 175 East 2nd Street, Suite 865, Tulsa, Oklahoma 74103
 - N. **"Secondary Seller"** shall mean the Seller whose Bid City selected as a back-up supplier in the event the Primary Seller is unable to provide all the Goods and/or Services required.

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- O. **“Seller”** shall mean the Bidder whose Bid City selected and awarded a contract.
- P. **“You” or “Your”** shall mean the Bidder responding to this Invitation For Bid or the Seller whose Bid the City selected and awarded a contract.
- Q. **“Website”** shall mean the City of Tulsa’s website for the Purchasing Division: www.cityoftulsapurchasing.org.

3. **QUESTIONS REGARDING INVITATION FOR BID.** Questions regarding any portion of this Invitation For Bid must be submitted in writing (sent by mail, fax or email) to the Project Buyer indicated on the Summary Sheet herein. You should submit questions as early as possible and preferably before the pre-Bid conference. Questions and concerns must be received no later than seven (7) days prior to the Bid Packet due date. Any oral responses to questions before the contract is awarded are not binding on City. At City’s discretion, any information or clarification made to you may be communicated to other Bidders that notified City of their intent to Bid if appropriate to ensure fairness in the process for all Bidders. You must not discuss questions regarding the Invitation For Bid with anyone other than the Project Buyer or other Purchasing Division staff or your Bid may be disqualified, any contract recommendation or Acceptance may be rescinded, or any contract may be terminated and delivered Goods returned at your expense and City refunded any payments made.
4. **ORAL STATEMENTS.** No oral statements by any person shall modify or otherwise affect the provisions of this Invitation For Bid and/or any contract resulting therefrom. All modifications, addenda or amendments must be made in writing by City’s Purchasing Division.
5. **EXAMINATION BY BIDDERS.** You must examine the specifications, drawings, schedules, special instructions and the documents in this Bid Packet prior to submitting any Bid. Failure to examine such documents and any errors made in the preparation of such Bid are at your own risk.
6. **ADDENDA OR AMENDMENTS TO INVITATIONS FOR BID.** City may addend or amend its Invitation For Bid at any time before the Bid Submission Date, and any such addenda or amendments shall become a part of this Agreement. City will attempt to send a notification (by fax or email) of any addenda or amendments to those Bidders who have responded to the City’s Project Buyer of their intent to respond to the Invitation For Bid. However, it is your responsibility to inquire about any addenda or amendments, which will be available from the City’s Purchasing Division and its website. You must acknowledge receipt of any addenda or amendments by signing and returning the Acknowledgment of Receipt of Addenda/Amendments form and attaching it to this Invitation For Bid with your Bid. City may reject any Bid that fails to acknowledge any addenda or amendments.
7. **SPECIFICATIONS/DESCRIPTIVE TERMS/SUBSTITUTIONS.** Unless the term “no substitute” is used, the City’s references to a brand name, manufacturer, make, or catalogue designation in describing an item in this Bid Packet does not restrict you to that brand or model, etc. The City may make such references to indicate the type, character, quality and/or performance equivalent of the item desired. However, you are required to furnish the exact item described in your Bid unless a proposed substitution is clearly noted and described in the Bid.

The parties recognize that technology may change during the period Bids are solicited and subsequent contracts are performed. Therefore, City may at its option accept changes or substitutions to the specifications for Goods of equal or better capabilities at no additional cost to City. In the case of existing contracts, you shall give City 30 days advance notice in writing of any such proposed changes or substitutions. City shall determine whether such items are acceptable as well as any proposed substitute.

All Goods shall be new unless otherwise so stated in the Bid. Any unsolicited alternate Bid, or any changes, insertions, or omissions to the terms and conditions, specifications, or any other requirements of this Bid, may be considered non-responsive and the Bid rejected.

8. **PRICES/DISCOUNTS.** Prices shall be stated in the units and quantity specified in the Bid Packet documents. In case of discrepancy in computing the Bid amount, you guarantee unit prices to be correct and such unit prices will govern. Prices shall include transportation, delivery, packing and container charges, prepaid by you to the destination specified in the Specifications. Discounts for prompt payment will not be considered in Bid evaluations, unless otherwise specified. However, offered discounts for prompt payment will be taken if payment is made within the discount period. With respect to some Invitations for Bid the City may request price adjustment Bids for renewal periods. If price adjustments Bids are requested the specifics of that request will be set forth on the Bid
9. **DELIVERY.** All prices quoted shall be based on delivery F.O.B. Tulsa, Oklahoma or to any other points as may be designated in the Technical Specifications, with all charges prepaid by Seller to the actual point of delivery. Bids must state the number of days required for delivery under normal conditions.

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- 10. TAXES.** City is exempt from federal excise and state sales taxes and such taxes shall not be included in the Bid prices.
- 11. BID SUBMISSION.** The Bid Packet forms must be prepared in the name of Bidder and properly executed by an Authorized Agent with full knowledge and acceptance of all provisions, in ink and notarized. Bids may not be changed or withdrawn after the deadline for submitting Bids (the "Bid Submission Date"). A Bid is an irrevocable offer and when accepted by City (as evidenced by City's execution of the Purchase Agreement) shall constitute a firm contract.
- A. BIDS MUST BE SUBMITTED ONLY ON THE BID PACKET FORMS AND SIGNED BY AN AUTHORIZED AGENT. THE ENTIRE BID PACKET MUST BE RETURNED AS RECEIVED WITH ALL FORMS COMPLETED. YOU MAY ATTACH, AFTER EXHIBIT A, ANY DOCUMENTS NECESSARY TO COMPLETELY AND ACCURATELY RESPOND TO THE REQUEST. BIDS MUST BE IN STRICT CONFORMANCE WITH ALL INSTRUCTIONS, FORMS, AND SPECIFICATIONS CONTAINED IN THIS BID PACKET.**
 - B.** Sealed Bids may be either mailed or delivered, but must be received at:
City of Tulsa – Office of City Clerk
175 East 2nd Street, Suite 260
Tulsa, Oklahoma 74103
 - C.** Bids will be accepted at the above address from 8:00 a.m. to 5:00 p.m., Monday thru Friday except for City holidays. City is not responsible for the failure of Bids to be received by the City Clerk's Office prior to the due date and time.
 - D.** Late Bids will be **rejected**. The Purchasing Agent, in his sole discretion, may make exceptions only for the following reasons:
 - 1. City Hall closed for business for part or all of the day on the date the response was due;
 - 2. If the City deems it appropriate due to large-scale disruptions in the transportation industry that may have prevented delivery as required.
 - 3. If documented weather conditions caused the late delivery. You must provide documentation of such weather to the satisfaction of the Purchasing Agent.
 - E.** **City will not accept faxed Bids**, nor will City accept Bids faxed to the City Clerk, Purchasing Division or Office, or any other City office or employee.
 - F.** City is not responsible for any of your costs in preparing the Bid response, attending a pre-Bid conference, or any other costs you incur, regardless of whether the Bid is submitted, accepted or rejected.
 - G.** All Bids must be securely sealed and plainly marked with the Bid Number, Bid Title, and Bid Opening Date on the lower left corner of the outside of the Bid envelope. Your name and address must also be clearly indicated on the envelope.
 - H.** If submitting multiple options ("Option(s)") to the Invitation for Bid, each will be considered separately requiring each response to be complete and accurate. Each Option must be clearly marked as Option 1 of 3, Option 2 of 3, etc.
 - I.** The number of copies you must submit is listed on the Summary Sheet in the front of the Bid Packet. However, at a minimum, there will be (1) an original, clearly labeled as such in 1" red letters on the Bid Packet cover page, and (2) a copy for City's Purchasing Division, clearly labeled as such in 1" red letters on the Bid Packet cover page. If binders are used, they must also be labeled.
 - J.** Multiple boxes or envelopes are permissible, but must not weigh more than 50 pounds. Each box must be labeled as instructed herein and numbered (i.e., Box 1 of 3; Box 2 of 3). **The original must be in Box #1.**
 - K.** The original and all copies (either paper or electronic) must be identical in all respects. Bids must be completed and submitted in ink or typewritten. Bids written in pencil will be rejected. Any corrections to the Bids must be initialed in ink.
- 12. BID REJECTION OR WITHDRAWAL.**
- A.** City may reject any or all Bids, in whole or in part.
 - B.** **A Bid may be rejected if it contains additional terms, conditions, or agreements that modify the requirements of this Invitation For Bid or attempts to limit Bidder's liability to the City.**
 - C.** A Bid may be rejected if Bidder is currently in default to City on any other contract or has an outstanding indebtedness of any kind to City.
 - D.** City reserves the right to waive any formalities or minor irregularities, defects, or errors in Bids.
 - E.** Bid withdrawal may only be accomplished by an Authorized Agent requesting the withdrawal in person at the City Clerk's office before the City's close of business on the Bid Submission Date.
- 13. BID RESULTS.** A tabulation of Bids received will be made available on the City's Purchasing Division website generally within 5 working days after the Bid Opening Date. After a contract award is recommended to the Mayor, a copy of the Bid summary will be available in the City Clerk's Office. Bid results are not provided in response to telephone or email inquiries.
- 14. PURCHASE ORDER.** In the event that the successful Bid is for an amount less than One Hundred Thousand Dollars (\$100,000), and it is determined by the City to be in the best interests of the City, the City, in its sole discretion, may issue a Purchase Order rather than execute the Purchase Agreement to purchase the Goods. If a Purchase Order is issued, however, the terms of the Bid

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Packet documents, including the Purchase Agreement, will govern the transaction and be enforceable by the City and Bidder/Seller.

15. **CONTRACT AWARD.** If a contract is awarded, it will be awarded to the Bidder that City determines is the lowest secure Bidder meeting specifications. Such Bid analysis will consider price and other factors, such as Bidder qualifications and financial ability to perform the contract, as well as operating costs, delivery time, maintenance requirements, performance data, history of contract relations with City, and guarantees of materials and equipment, as applicable. A complete list of the factors that are considered is set forth in Tulsa Revised Ordinances, Title 6, Ch. 4, §406E. Unless otherwise noted, City reserves the right to award a contract by item, one or more groups of items, or all the items in the Bid, whichever is in City's best interest.
16. **IRS FORM W-9.** If City selects your Bid and awards a contract to you, you will have ten (10) days from notification of the award to provide City with your complete IRS Form W-9.
17. **NOTICE TO PROCEED.** If City accepts your Bid and executes the Purchase Agreement, you shall not commence work until authorized to do so by the Purchasing Agent or his representative. Receipt of a Purchase Order from the City is notice to proceed.
18. **PAYMENTS.** Invoices should be mailed to: City of Tulsa – Accounts Payable
175 East 2nd Street, 8th floor
Tulsa, Oklahoma 74103

Payment will be made Net 30 days after receipt of a properly submitted invoice or the City's Acceptance of the Goods and/or Services, whichever is later, unless City decides to take advantage of any prompt payment discount included in the Bid.

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SPECIAL REQUIREMENTS

1. Irrevocable Offer Period. You understand and acknowledge that the offer submitted as your Bid is firm and irrevocable from the City's close of business on the Bid Submission Date until 365 days after the Bid Opening Date.

2. General Liability/Indemnification. You shall hold City harmless for any loss, damage or claims arising from or related to your performance of the Purchase Agreement. You must exercise all reasonable and customary precautions to prevent any harm or loss to all persons and property related to the Purchase Agreement. You agree to indemnify and hold the City harmless from all claims, demands, causes of action or suits of whatever nature arising out of the Goods, Services, labor, or materials furnished by you or your subcontractors under the provisions of the Bid Packet documents.

3. Liens. Pursuant to City's Charter (Art. XII, §5), no lien of any kind shall exist against any property of City. Bidder shall deliver all goods to City free and clear of liens. Delivery by Seller to City of goods which are subject to liens under the Purchase Agreement shall be a material breach of the Purchase Agreement and all damages and costs incurred by City as a result of the existence of such liens shall be paid to City by Seller. At City's option, City may return such goods to Seller and Seller shall pay the cost of returning such goods and reimburse City for any payments made for such goods.

4. Insurance. If checked "Yes," the following insurance is required: **No: X**

Seller and its subcontractors must obtain at Seller's expense and keep in effect during the term of the Purchase Agreement, including any renewal periods, policies of General Liability insurance in the minimum amounts set forth below and Workers' Compensation insurance in the statutory limits required by law.

Personal injury, each person	\$ 175,000.00
Property damage, each person	\$ 25,000.00
Auto Liability, each occurrence	\$ 1,000,000.00
Personal injury and property damage, each occurrence	\$ 1,000,000.00
Workers' Compensation	(Statutory limits)

SELLER'S INSURER MUST BE AUTHORIZED TO TRANSACT BUSINESS IN THE STATE OF OKLAHOMA.

Seller's insurance policy and all certificates of insurance must state that the insurer cannot change or cancel coverage without the insurer first giving 30 days written notice to City of such change, cancellation or termination. You will have 10 days after notification that your Bid was selected for contract award by City to provide proof of such coverage. The Certificate of Insurance must be completed with the following information:

- A. Your name
- B. Insurer's name and address;
- C. Policy number;
- D. Liability coverage and amounts;
- E. Commencement and expiration dates;
- F. Signature of authorized agent of insurer;
- G. Invitation For Bid number.

The completed Certificate of Insurance form should be sent to the assigned Project Buyer reflected on the Summary Sheet of this Bid Packet. An endorsement from the insurer must be obtained by Seller which adds City as an Additional Insured to the policy and states that the insurer will provide City with notice thirty days in advance of termination, cancellation or change in the coverage of the policy. The cancellation clause on your certificate must conform to the endorsement. Any conflict between the endorsement and the certificate is a material breach of the Purchase Agreement and can result in the retraction by City of the award of the Bid to Seller

5. Bonding.

A. Bid Bond. If the box is checked "Yes," the Bid Bond is required:

No: X

B. Performance Bond. If the box is checked "Yes," the Performance Bond is required:

Yes: X Amount: 100% of Bid amount

6. References. If the box is checked "Yes," References are required:

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No: X

Bidders shall furnish the names, addresses, agreement, telephone numbers, length of services and size of property of a minimum of five- (5) firms or government organizations for which the vendor is currently furnishing or has in the past furnished services. If required, **attach** customer references to bid response using the following format:

CUSTOMER REFERENCES

Length of services must be of at least _____.

- COMPANY NAME
- ADDRESS
- CONTACT NAME
- TELEPHONE NUMBER
- DESCRIBE SERVICES PROVIDED
- LENGTH OF TIME PROVIDING SERVICES

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TECHNICAL SPECIFICATIONS
Nominal 114-ft. Articulating Aerial Platform Type Fire Apparatus
August 30, 2010

1.00 SUPPLEMENTAL AND ADMINISTRATIVE

- 1.01 The Tulsa Fire Department intends to purchase three or more nominal 114-ft. solid wall aerial devices with articulating jib boom type aerial platforms.
- 1.02 It is the intent of the Fire Department to enter into a contract that would include an option of renewal for the purchase of additional apparatus of the same design and specification. Each contract period would be for a period of 12-months and an option for two renewals.
- 1.03 The specifications herein have been divided into the following sections:
- Section 1 SUPPLEMENTAL AND ADMINISTRATIVE
 - Section 2 CHASSIS
 - Section 3 CAB
 - Section 4 ELECTRICAL FOR CAB AND CHASSIS
 - Section 5 FIRE BODY
 - Section 6 ELECTRICAL FOR FIRE BODY
 - Section 7 PUMP, PLUMBING, FOAM AND TANK
 - Section 8 GENERATOR, A/C POWER AND LIGHTING
 - Section 9 AERIAL DEVICE
 - Section 10 BREATHING AIR SYSTEM
 - Section 11 AUDIBLE AND VISUAL WARNING DEVICES
 - Section 12 COMMUNICATIONS, DATA RECORDER AND ELECTRONICS
 - Section 13 PAINT AND FINISH
 - Section 14 LOOSE EQUIPMENT
 - Section 15 OPTIONS
 - Section 16 ATTACHMENTS & ADDENDUM
- 1.04 The completed apparatus will be designed and construction in compliance to the 2009 edition of NFPA 1901 standard for Automotive Fire Apparatus. The bidder will disclose any known deficiencies to this standard.
- 1.05 The Tulsa Fire Department will be responsible for providing equipment required by NFPA 1901. Consequently, the manufacturer will be relieved of the burden to provide those items such as, but not limited to, the placement of a defibrillator onto the apparatus.
- 1.06 The Bidder will provide as much detail concerning the proposed vehicle as possible. Items or issues that are not specifically described in the Bidder's proposal may be considered absent, non-responsive, and non-compliant to these specifications. The Tulsa Fire Department retains the sole right in determining compliance to the specifications where the bid response includes Bidder provided exceptions, alternative options or is otherwise subjective as compliant to these specifications.
- 1.07 The Bidder will provide a copy of their license to sell motorized vehicles within the State of Oklahoma.
- 1.08 All components used in the manufacturing and assembly of the apparatus will be new, unused, first line quality and representative of the manufacturer's latest methods and techniques.
- 1.09 The manufacturer will design and construct the apparatus so as to provide access to all parts and components that require periodic inspection, lubrication, adjustment or repair. This may include, but will not be limited to, the creation of removable inspection panels.
- 1.10 The Vendor will disclose to the Tulsa Fire Department the existence of any special or unique tools that are required to inspect or service the completed apparatus.
- 1.11 A pre-bid meeting will be required between the Bidder and the City of Tulsa. It is the intent of this meeting to review the proposed specifications before the bid so as to allow changes before the actual bid process. The date, time and specific meeting location will be scheduled with the Tulsa Fire Department at City Hall, One Technology Center, 175 East 2nd Street, Tulsa, OK 74103.

MEETINGS & INSPECTIONS AT THE MANUFACTURING FACILITY

- 1.12 The Vendor will schedule with the Tulsa Fire Department the following meetings and inspections at the manufacturing facility. The Vendor will provide the travel and lodging for each of these meetings for each of the apparatus and/or their major components. Where possible, the meetings and inspections may be combined.
- 1.12.01 Preconstruction meeting to review and make any needed changes to the specifications and/or construction

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documents for the apparatus prior to its actual manufacture or assembly. This one meeting will address all three apparatus and will include three (3) Tulsa Fire Department representatives for no less than two full days to address all three apparatus.

- 1.12.02 Inspection of the aerial device when it is delivered to the manufacturing facility. This meeting will include one (1) Tulsa Fire Department representative for no less than four hours per apparatus.
- 1.12.03 Inspection of the chassis when it is delivered to the manufacturing facility. This meeting will include one (1) Tulsa Fire Department representative for no less than four hours per apparatus.
- 1.12.04 Mid-construction inspection of the apparatus when the fire pump, water tank, generator, aerial device and fire body have been mounted onto the chassis. The inspection is intended to illustrate the interface of all of the related components on the chassis and to allow changes before the truck has been completed with paint, trim and other finishing items. This inspection will include three (3) Tulsa Fire Department representatives for no less than one day per apparatus.
- 1.12.05 Final Inspection of the apparatus when assembly has been finished, aerial testing has been completed, pump testing has been completed, and generator operational testing has been completed. The apparatus is to be ready to leave the manufacturing facility. This inspection will include three (3) Tulsa Fire Department representatives for no less than one full day for each apparatus.

- 1.13 For the purpose of efficiency, the Vendor is encouraged to provide photographs and data related to the apparatus and components for the Tulsa Fire Department to review prior to the scheduled meetings or inspections.

TESTS AND CERTIFICATIONS

- 1.14 The Vendor will provide documentation of all applicable certifications conducted by an independent third-party described and required by NFPA 1901. This will include, but may not be limited to;
 - 1.14.01 Aerial device
 - 1.14.02 Fire pump
 - 1.14.03 Foam proportioning system
 - 1.14.04 Water and foam tank capacity
 - 1.14.05 Generator and line voltage system
 - 1.14.06 Low voltage electrical systems and warning devices with actual the measurement technique
 - 1.14.07 Breathing air system
- 1.15 The Vendor will provide additional inspections, calibrations and warranty repairs to the apparatus at six, twelve, and twenty-four month intervals from the date of acceptance.
- 1.16 The Vendor will provide special tools and equipment needed to inspect, maintain and/or calibrate the aerial device.

DELIVERY AND ACCEPTANCE

- 1.17 Following any final changes or modifications at the manufacturing facility, the completed apparatus will be driven to the Tulsa Fire Department, 1790 Newblock Park Drive, Tulsa, OK 74127 under its own power. The Vendor will be responsible for drivers, fuel, permits, repair of any incurred damage or other related expenses.
- 1.18 It is acceptable for the vendor to arrange for final details of the apparatus at a facility other than the manufacturing facility so long as it does not interfere with the physical performance of the apparatus. This is intended to include, but not be limited to, reflective stripes, lettering and numbers, radio programming. It is acceptable to stage the unfinished apparatus at the Tulsa Fire Department Physical Resources for the described details to be completed. However, this will be at the risk of the Vendor as the City of Tulsa will not recognize the apparatus as being delivered or accepted.
- 1.19 The Tulsa Fire Department will recognize the apparatus as being delivered when apparatus has no additional work to be conducted and is offered to the Fire Department as complete, finished, and ready for an acceptance inspection. The vehicle will be presented to the Tulsa Fire Department with:
 - 1.19.01 All fluid levels will be full and within operating ranges for fuel, motor oil, coolant, power steering, windshield washer fluid, transmission fluid, rear axle, hydraulics for the aerial device, and hydraulics for the generator.
 - 1.19.02 Properly operating air conditioning system.
 - 1.19.03 Proper front end alignment.
 - 1.19.04 Properly adjusted and operating suspension system.
 - 1.19.05 Properly inflated tires.
 - 1.19.06 Properly operating electrical system including the load management, lighting, and audible-visual warning devices.
 - 1.19.07 Presentation of applicable literature, manuals, and documents.
- 1.20 With the delivery of the apparatus, the Tulsa Fire Department will conduct an acceptance inspection of the apparatus as described in NFPA 1911 *standard for the Inspection, maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus* and section 4.18 of NFPA 1901 *standard for Automotive Fire Apparatus*. The acceptance inspection will also serve as a review for compliance to the specifications, actual performance of the apparatus while driving, operation of the aerial device, fire pump, generator and breathing air system.

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- 1.21 The Fire Department will accept the apparatus with the resolution of any identified deficiencies identified during the acceptance inspection. Acceptance will include the authorization for payment for the apparatus.
- 1.22 The Fire Department will begin the process of preparing the apparatus for service, including operational training, following the acceptance of the apparatus. However, the Department will not place the apparatus into emergency service until it is in receipt of the Title or Manufacturer's Statement of Origin (MSO). The Vendor will in return, deliver the MSO within 30 days of receipt of final payment for the apparatus and related equipment.

TRAINING

- 1.23 The Vendor will provide operational training to Tulsa Fire Department representatives for three consecutive days. This will likely include Training Officers, Company personnel and Maintenance Technicians.
- 1.24 The Vendor will provide technical maintenance training for two Maintenance Technicians per apparatus. The training will be specifically directed at the aerial device though it may incorporate other topics such as, but not limited to; multi-plex electrical systems, fire pumps, generators, chassis, etc. If the training is offered at a location greater than 50 miles from Tulsa, the Vendor will arrange for travel and lodging at no expense to the selected Maintenance Technician. Due to the limited number of Maintenance Technicians, no more than two may attend training at the same time.

A copy of the training curriculum will be provided for the Maintenance Technicians to study and review before actual participation in the training program.

MANUFACTURING DOCUMENTS

- 1.25 The Vendor will provide at the time of delivery the following:
- 1.25.01 One hard copy and two CDs operation or training manual describing the apparatus and its related systems.
 - 1.25.02 One hard copy and two CDs of "as built" electrical drawings with component location with technical description and specification.
 - 1.25.03 One hard copy, or CD, of listed parts including their description. This should include a cross reference for after market parts.
 - 1.25.04 One hard copy, or CD, of repair or service manual describing lubrication charts, engineering drawings and information needed for the maintenance and repair of the apparatus and related systems
 - 1.25.05 Service and operation manuals for all ancillary components or systems.
 - 1.25.06 One CD of the Vehicle Technician training program curriculum.

HARDWARE AND SOFTWARE

- 1.26 For each purchase order of one or more apparatus, the Vendor will provide the following software in the form of CD/DVD/electronic file or internet access with appropriate password(s):
- 1.26.01 One Panasonic Toughbook CF-19 Part #CF-19KCRC66M that will include *VISTA COA* Intel Core 2 Duo SU9300 1.2 Ghz (Centrino2VPro), 10.4" Dual Touch XGA, 160GH, 2 GH, Intel WiFi A/b/g/n, Dual pass (Upper WWAN/Lower GPS, WINXP Tablet, TPM 1.2, Bluetooth, 2MP Cam, Gobi, Fast GPS-3W, Rubber Backlit Keyboard, No Optical, Toughbook Pr., AC adapter (3-pin) Part # CF-AA1633AM, External USB Combo Drive (DVD/ROM/CD-RW) Part #CF-VDRRT3U. The recommended vendor is Rick Woodard, Paradigm System Solutions, Inc., 319 Westminister Ave, Dallas, TX 75205. 214-675-4388 fax 952-882-9889. The computer is intended to be used to support the diagnostic equipment and to allow the Fire Garage Mechanic to interface with the Fire Department.
 - 1.26.02 Cummins
 - 1.26.02.01 One copy of Cummins Troubleshooting/Repair Manual
 - 1.26.02.02 One Cummins Inline 5 USB kit
 - 1.26.02.03 One Cummins Quickcheck 5100
 - 1.26.02.04 One Cummins Quickcheck 5100 handheld
 - 1.26.02.05 One Cummins ISM Owners Manual
 - 1.26.02.06 One Cummins Warranty Manual
 - 1.26.02.07 One of each module from Cummins Virtual Engine
 - 4091840 Belt Update-Basic Electronics Theory and troubleshooting
 - 4091907 (Gen-2) BETT
 - 4091908 (Gen-3) BETT
 - 4091909 (Gen-4) BETT
 - 4091910 (Gen-5) BETT
 - 4091847 (Gen-12) QSOL and Clean Care
 - 4091945 (Tutorial) How to use the Virtual College Library
 - 4091911 (Gen-6) Insite 6 Update
 - 401912 (Gen-7) Insite 6 Update
 - 4091839 INSITE 6 Update Virtual College
 - 4091913 Cummins Virtual College (Gen-8) Fuel Systems – CELECT, Quanturm, HPI-TP
 - 4091926, Disc HD-08, Intro cooling, lube, fuel, engine brake
 - 1.26.03 Allison Transmission
 - 1.26.03.01 One Allison DOC® for Fleets (3000/4000)

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- 1.26.03.02 One Allison Electronic Controls Feature Information
- 1.26.03.03 One Allison General Technician Guide
- 1.26.03.04 One Allison Warranty Manual
- 1.26.04 Meritor WABCO
 - 1.26.04.01 One Toolbox Software™
- 1.26.05 Chassis multiplex software and hardware, Weldon 6131-0000-00 V-MUX kit, diagnostics, USB/Downloader
- 1.26.06 Aerial diagnostic software and hardware to include one printed set of manuals, two CD of printed materials, key to electrical panels, torque tool, grease gun adapter, hydraulic adapter and manual crank.

BONDS & WARRANTY

- 1.27 The Vendor will provide a performance bond for each apparatus in the amount of 100 percent of the bid price for each apparatus including provided equipment. The bond will be required at the time of the contract signing and will be maintained through the acceptance of the apparatus by the Tulsa Fire Department.
- 1.28 The Vendor will warrant each vehicle to be of good material and workmanship and agrees to promptly repair or replace any part or parts that are a result of defective materials or workmanship that fail under normal use, free of negligence or accident for a period of no less than two (2) years from the time of apparatus acceptance.
- 1.29 In addition to the basic two year warranty, the Vendor will provide the following warranties for the major components of the apparatus. Warranty information will be provided at the time of the pre-bid conference and the actual warranty documents will be completed at the time of apparatus acceptance.
 - 1.29.01 Entire apparatus, bumper to bumper Two years
 - 1.29.02 Paint and striping Five years
 - 1.29.03 Chassis cab corrosion and metal cracking Ten years
 - 1.29.04 Fire body corrosion and metal cracking Ten years
 - 1.29.05 Water and foam tank Lifetime of apparatus
 - 1.29.06 Chassis frame rails for cracking, warping or other structural damage Lifetime of apparatus
 - 1.29.07 chassis frame cross-member cracking, warping or other structural damage Five years
 - 1.29.08 Aerial device structural integrity Twenty years
 - 1.29.09 Aerial device electrical and hydraulic controls Five years
 - 1.29.10 Cummins Engine Five years
 - 1.29.11 Allison Automatic Transmission Five years
 - 1.29.12 Fire pump and pump transmission Five years
 - 1.29.13 Hydraulic generator Five years
 - 1.29.15 Foam proportioning system Two years
 - 1.29.16 Rear suspension system Four years
 - 1.29.17 Headset intercommunication system Two years
 - 1.29.18 Stainless Steel fire pump plumbing Ten years
 - 1.29.19 Liquid filled gauges Three years
- 1.30 The Vendor will provide a warranty bond for each apparatus for a sum of no less than ten (10) percent of the apparatus cost. The bond will begin at the time of the apparatus acceptance and will remain in effect for a period of no less than two years.
- 1.31 The Manufacturer of the completed apparatus will provide documentation demonstrating the existence of no less than \$15 million dollars of product liability insurance.

WARRANTY REPAIRS

- 1.32 The Tulsa Fire Department expects the Vendor to have access to an adequate stock of replacement parts available to the service the apparatus and to make delivery of the parts within seventy-two (72) hours from the time of notification.
- 1.33 Should the apparatus require warranty service outside the City limits of Tulsa, the Vendor will arrange for the transportation and related costs.
- 1.34 The Vendor will respond within seventy-two hours of notification by the City of Tulsa, on when, where and how a warranty issue will be resolved. In the event there is no response within seventy- two hours, or if the response is not acceptable to the City, the City will provide or arrange for the repairs. The Vendor will then reimburse the City of Tulsa for all costs incurred.
- 1.35 The Vendor may request the City of Tulsa to perform minor warranty replacement or repairs and then reimburse the City for its labor and parts used to enact the repair. The reimbursement for labor will be at the same rate as that of the actual work performed. The labor rate for fiscal year 2009-2010 is \$54.00 per hour during normal business hours and \$81.00 per hour after normal business hours.

DELIVERY AND LIQUIDATED DAMAGES

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1.36 The Bidder will identify the expected date of delivery of each of the apparatus. Should the Bidder fail to deliver the specified apparatus within the prescribed time, the City of Tulsa may collect liquidated damages for the amount of one hundred dollars (\$100) per apparatus per calendar day to a maximum of the contract price. The Bidder will not be liable if the inability to provide the apparatus arises from causes beyond the control and without fault or negligence of the Bidder such as acts of God, war, fire, floods, freight embargoes, etc.

Should a performance failure occur, it will be the responsibility of the Bidder to immediately notify the City of Tulsa in writing and submit proof of the circumstances for the delay or inability to deliver the specified apparatus. A Bidder will then negotiate a new delivery schedule.

PAYMENT

1.37 With actual inspection and collection of individual make, model and serial numbers, the City of Tulsa will provide payment of invoices for at the following points of the project less ten (10) percent that will be held to the acceptance of the delivered apparatus.

- 1.37.01 Completion of the cab and chassis to a level that it has the ability to physically maneuver under its own power from the manufacturing facility to the facility where other components are to be installed.
- 1.37.02 Delivery of the aerial device to the manufacturing facility where it will be installed onto the chassis.
- 1.37.03 Construction and installation of the fire body onto the chassis. This will be considered part of the Mid-construction phase of the project where the aerial device, fire pump, generator and fire body are in the process of being installed onto the chassis.
- 1.37.04 Delivery of the loose equipment for the apparatus.

1.38 The final ten percent of the apparatus will be approved for payment with the acceptance of the apparatus by the Tulsa Fire Department.

DATA TO BE PROVIDED AT THE PRE-BID CONFERENCE

1.39 The Bidder should provide the following at the time of the pre-bid conference:

- Drawing of the proposed apparatus representing the front, rear and left and right sides.
- Physical dimensions in bumper to bumper length, nested height, overall width
- Wheelbase
- Curb to curb turn radius
- Wall to wall turn radius
- Front axle weight
- Rear axle weight
- Angle of approach
- Angle of departure
- Weight distribution between front and rear axles
- Estimated side-to-side tire load variation

DATA TO BE PROVIDED WITH THE BID

1.40 The Bidder will provide the following information as part of the bid packet.

- 1.40.01 Estimated Overall length
- 1.40.02 Estimated overall travel height
- 1.40.03 Estimated overall weight
- 1.40.04 Wheelbase
- 1.40.05 Curb to curb turning radius
- 1.40.06 Wall to wall turn radius
- 1.40.07 Front axle weight rating
- 1.40.08 Estimated front axle weight without equipment or personnel
- 1.40.09 Maximum cramp angle of the steering axle turned to the right with 445 sized wheels
- 1.40.10 Maximum cramp angle of the steering axle turned to the right with 445 sized wheels
- 1.40.11 Rear axle weight rating
- 1.40.12 Estimated rear axle weight without equipment or personnel
- 1.40.13 Angle of approach
- 1.40.14 Angle of departure
- 1.40.15 Preliminary drawing specific to the bid proposal
- 1.40.16 Rated vertical height as described by NFPA 1901
- 1.40.17 Rated horizontal reach as described by NFPA 1901
- 1.40.18 Structural safety factor for the aerial device
- 1.40.19 Rated platform capacity of the platform including equipment, without water in the waterway, in all positions without operational restrictions
- 1.40.20 Rated platform capacity of the platform including, with water in the waterway, in all positions without operational restrictions

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- 1.40.21 Stabilization factor while on firm level ground and at a 5 degree slope
- 1.40.22 Maximum expected ground pressure at a stabilizer with and without the use of an auxiliary ground pad
- 1.40.23 The maximum wind speed allowed without alteration of the platform load capacities
- 1.40.24 Description of limitations related to horizontal or vertical position of the monitor nozzle while the aerial is in use
- 1.40.25 Number of electrical rings in the rotational swivel
- 1.40.26 Size of the waterway through the rotational swivel
- 1.40.27 Total amount of compartment space measured in cubic feet
- 1.40.28 Number of lineal inches of lower compartment space opening located no greater than 32-inches from grade
- 1.40.29 Warranty periods described in section 1.28 of these specifications
- 1.40.30 Training to be provided
- 1.40.31 Vehicle or Component tests and certifications to be provided
- 1.40.32 Recognition and response to warranty repairs

2.00 CHASSIS

- 2.01 The chassis will be a custom to the fire service medium length four-door cab with side opening doors mounted onto a truck chassis with a total of five seated positions, four with SCBA storage brackets.
- 2.02 The cab will be designed to tilt forward for greater access to the engine compartment for periodic inspection and maintenance.
- 2.03 The chassis will be designed and constructed to accommodate routine maintenance. For example, wiring harnesses positioned near the engine will be placed where they will not interfere with, or be exposed to, the maintenance and periodic replacement of the oil or fuel filters.

AXLES AND SUSPENSIONS

- 2.04 The frame will be engineered by the manufacturer and designed to adequately support the total Gross Vehicle Weight Rating (GVWR) in a safe and serviceable manner. Sufficient cross-members and frame liners will be provided to properly support the cab, body and related components without being damaged.
- 2.05 The apparatus axles and suspension systems will be designed to safely carry the apparatus with personnel and equipment without exceeding the weight rating for the axle or suspension.
- 2.06 The apparatus will carry no less than 25% nor more than 45% of its total loaded weight on the front axle.
- 2.07 The apparatus will not have more than 7% side-to-side tire load variation.
- 2.08 A Dana or Meritor hub piloted front axle with a load rating sufficient enough to carry the anticipated load of the apparatus, water, equipment and personnel will be provided.
- 2.09 The front axle will be provided with Stemco oil seals.
- 2.10 The front suspension will be designed and assembled to safely manage the load placed upon the front axle. The bid will describe the design and rating of the front suspension.
- 2.11 The front axle will be provided with heavy duty telescoping shock absorbers (Monroe Magnum 70) or equal.
- 2.12 A Meritor hub piloted type rear axle with a load rating sufficient enough to safely carry the anticipated load of the apparatus, water, equipment and personnel will be provided.
- 2.13 The tandem rear axle with an inter-axle differential, to divide the torque evenly between the axles. Control of the differential will be managed by a switch located on an instrument panel within reach of the driver.
- 2.14 The rear axle is to be a single reduction differential with a top speed of 60 miles per hour at governed speed as required by NFPA 1901.
- 2.15 The rear axle will be provided with oil seals.
- 2.16 The rear axles will be provided with a Dynalastic RD-202S suspension sufficiently designed and rated to safely carry the anticipated load of the apparatus, water, equipment and personnel.

BRAKES AND AIR SYSTEM

- 2.17 The entire braking system will meet or exceed FMVSS 121 and the 2009 edition of NFPA 1901.
- 2.18 The front brakes will be Meritor model EX225 DiscPlus™ air disc brakes, or equal, with no smaller than 17 inch diameter rotors will be provided.

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- 2.19 The rear brakes will be heavy-duty type S-cam drum brakes with no smaller than 16-1/2" x 7" cast shoes and outboard drums manufactured by Meritor. Stamped metal shoes will not be accepted.
- 2.20 The parking brake will consist of a spring brake actuated on the rear axle.
- 2.21 The front brakes will be provided with integrated adjustment mechanisms, and the rear brakes will be provided with automatic slack adjusters, to maintain proper adjustment of the brake systems.
- 2.22 Both the front and rear brakes will be provided with brake adjustment indicators on each brake/wheel. The preferred indicators are Tectraw model BR02.
- 2.23 A Tru-Flo 750, 18.7 CFM or larger air compressor will be provided.
- 2.24 The air system will have a storage capacity of no less than 5,800 cubic inches.
- 2.25 The air tanks will be provided with manually operated drains.
- 2.26 The air drier will include a heated automatic moisture ejector.
- 2.27 The driver's dash will include two air pressure gauges, or a dual needle gauge, to identify air pressure in both the front and rear air systems.
- 2.28 A red warning light with audible alarm will be provided on the driver's dash to warn of low air pressure.
- 2.29 A warning light marked with "Parking Brake" will be positioned on the driver's dash to indicate that the engagement/application of the parking brake.
- 2.30 A Bendix-Westinghouse SR-1 valve with a double check valve system will be provided to automatically engage the spring brake at 40 psi.
- 2.31 The brake lines are to be nylon, color coded lines that are wrapped in a loom for the entire length of the hose.
- 2.32 High pressure, wire-braid reinforced, flexible rubber air lines will be provided at each brake drum.
- 2.33 All air lines are to be provided with DOT compression fittings.
- 2.34 An air inlet system will allow an external air source to feed into the air brake system through a shoreline or other source. The inlet is to be equipped with a male coupling and located near the driver's door. A check valve must be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system.
- 2.35 An air outlet will allow air to be discharged from the apparatus. The outlet will be located near the driver's door and provided with a female coupling. The air outlet will be connected to a non-strategic air tank.
- 2.36 The couplings used for the air intake and discharge outlet will be compatible with industrial type "D" air fittings.
- 2.37 The apparatus will be provided with Meritor WABCO Anti-lock Braking System (ABS) with Automatic Traction Control (ATC) and Electronic Stability Control System (ESC). A switch will be located within reach of the driver to temporarily override the ATC. Roll-Stability-Control (RSC) will not be considered as a substitute for the ESC.

WHEELS AND TIRES

- 2.38 Both the front and rear wheels are to be hub pilot Alcoa aluminum wheels.
- 2.39 The front wheels will be provided with stainless steel hub covers with an opening to allow the viewing of the Stemco oil seals. The wheels will also be provided with stainless steel lug nut covers.
- 2.40 The front tires will be 445/65R22.5, or appropriate, to carry the anticipated load placed upon the front axle. In addition to the load rating, the tires will have a speed rating of no less than 60 miles per hour. The tires will be manufactured by Goodyear and will be of a highway tread design.
- 2.41 The rear tires will be 315/80R22.5 tires with a load rating sized to carry the anticipated load placed upon the rear axles. In addition to the load rating, the tires will have a speed rating of no less than 60 miles per hour. The tires will be manufactured by Goodyear and will be of a highway tread design.
- 2.42 The rear axles will be provided with stainless steel high hats to cover the rear hubs. The wheels will also be provided with stainless steel lug nut covers.

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- 2.43 The inner rear wheels will be provided with extended valve stems to improve access, inspection of air pressure and inflation.
- 2.44 Each set of rear dual wheels will be provided with a tire pressure equalization system. The preferred system is a Crossfire equalizer with stainless steel hoses.
- 2.45 All wheels will be provided with valve stems will be provided with caps that display the individual tire's air pressure as acceptable or unacceptable.
- 2.46 The apparatus will be provided with a Tire Pressure Monitoring System (TPMS) with a display located inside the cab to show the pressure contained within each wheel.
- 2.47 One spare front wheel with mounted tire and one rear wheel with spare tire, each of the same make, model and design as those mounted onto the chassis, will be provided with each apparatus.

FRONT BUMPER AND BOTH FRONT AND REAR TOW HOOKS

- 2.48 A 24 inch extension will be provided for the front bumper.
- 2.49 The front bumper will be 10-inch heavy duty steel bumper with full wrap around design. The bumper will be painted the job color with the vertical portion covered with reflective material.
- 2.50 A hose storage well will be located between the frame rail extensions for the purpose of storing fire hose. The storage well will have an open top with black vinyl cover that will hold the hose inside the well. The straps will be positioned where the vinyl cover will drape over the front of the bumper while the hose is being deployed.
- 2.51 A second and smaller hose storage well will be located on the driver's side. The storage well will have an open top with black vinyl cover that will hold the hose inside the well. The straps will be positioned where the vinyl cover will drape over the front of the bumper while the hose is being deployed.
- 2.52 A single chrome finished swivel outlet finished with a 1-1/2" NST male fitting will be located between the storage wells positioned above the bumper. The Fire Department intends to attach a gated wye to provide water to the hose loads located in the front bumper.
- 2.53 Two illuminated sight rods, one each side, will be provided to assist the driver in locating the front corners of the bumper. The sight rods will use an LED lamp for illumination.
- 2.54 Two stainless steel tow hooks will be installed on the underside of the extended front bumper.
- 2.55 Two 2-3/4" steel tow eyes will be mounted to the frame at the rear of the vehicle and attached to each inner frame rail web.

WHEEL WELLS ON THE CAB

- 2.56 Full circular inner fender liners manufactured of aluminum will be provided on the cab.
- 2.57 Stainless steel or polished aluminum fender crowns will be installed at the cab wheel openings.
- 2.58 Heavy-duty mud flaps will be provided behind each of the front wheels.

DRIVELINE

- 2.59 The motor will be a new Cummins ISM diesel motor producing 500-Hp and 1,550 ft-lbs of torque. A pre-2010 motor is preferred if still available.
- 2.60 The motor will be provided with:
 - 2.60.01 AIR CLEANER: Farr or equal, dry-type, dual replaceable element with air restriction indicator.
 - 2.60.02 AIR COMPRESSOR: Tru-Flow 750, 18.7 CFM
 - 2.60.03 FUEL FILTERS: Dual with check valves
 - 2.60.04 GOVERNOR: Electronically controlled.
 - 2.60.05 LUBE OIL COOLER
 - 2.60.06 LUBE OIL FILTER: Full flow, spin on type.
 - 2.60.07 STARTING MOTOR: 12-volt
 - 2.60.08 CHARGED AIR COOLED
 - 2.60.09 ELECTRONIC CONTROLS
 - 2.60.10 WATER SEPARATOR: In-Line Racor, or equal, with indicator light and audible alarm
 - 2.60.11 FUEL PUMP: Electric

FUEL SYSTEM

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- 2.61 The fuel lines will be braided with shut off points located at the fuel tank and at each side of the fuel filter, lift pump and water separator.
- 2.62 The fuel tank will contain a minimum of 65 gallons. The tank is to be located between the frame rails with a ground clearance that will not jeopardize the departure angle of the apparatus.
- 2.63 The fuel tank will be provided with a drain, swash partitions and a vent. The fill inlet will be located on the driver's side of the fire body covered with a marked "Diesel Fuel Only" sign. A ½" vent is to be provided from the top of the fuel tank to just below the fuel fill inlet. The fuel tank will meet or exceed all applicable requirements.
- 2.64 The fuel tank fill inlet is to be located behind a compartment door similar to that used by the SCBA spare cylinder compartments.
- 2.65 Servicing of the fuel pick up tubes and fuel gauge sending units will be accomplished without draining the fuel or dropping the tank from its mounting. If necessary, side access panels capable of being removed without the use of special tools, are provided in compartments adjoining the fuel tank.
- 2.66 The fuel system, in or near the fuel tank, will be provided with an electric fuel lift pump.

EXHAUST

- 2.67 The exhaust piping will be located as to not expose any portion of the apparatus, equipment or operator to excessive heat. Suitable heat shields and/or insulation wraps will be provided where heat may damage various systems including storage compartments.
- 2.68 An appropriate sized muffler will be provided to reduce the sound production of the motor.
- 2.69 The exhaust will terminate ahead of the right rear wheels with a connection to a Plymovent vehicle exhaust system.

COOLING SYSTEM

- 2.70 The apparatus manufacturer will provide sufficient cooling of the engine to eliminate the need for Engine Over-Temperature Protection (EOP). The apparatus engine will be capable of providing 100% horsepower at all times.
- 2.71 The radiator will be of sufficient size with the cooling capacity recommended by the engine manufacturer.
- 2.72 The radiator will be a three section type for intercooler, radiator and transmission cooler. A drain cock will be provided at the lowest point of the radiator.
- 2.73 The fan for the engine and cooling system will use an electrically controlled clutch to allow intermittent operation only when needed.
- 2.74 Air to the radiator will enter through a chrome plated or polished stainless steel grille located on the front of the cab face.
- 2.75 Gates, Goodyear, or Dayco rubber hose will be used for all engine coolant lines. The hose clamps will be of a design commonly called "constant torque type" to prevent coolant leakage.

DRIVE SHAFT AND TRANSMISSION

- 2.76 The drive shaft will be a heavy-duty metal tube and equipped with Dana (Spicer) series 1810 universal joints. All drive shafts are to be dynamically balanced before installation. A spline slip joint is to be provided.
- 2.77 A drive shaft safety loop will be provided for the portions of drive shaft that are in excess of 36-inches in length. The safety loop will be positioned where it will keep the shaft from striking the ground should there be a failure of the shaft or joint.
- 2.78 The transmission will be an Allison EVS 4500 automatic. The transmission will have two PTO ports, one located on the side and one located on top.
- 2.79 The transmission will be a five-speed with reverse. The engine, transmission and rear end are to be designed to provide a top speed of sixty (60) miles per hour as a described by NFPA 1901.
- 2.80 The transmission will be provided with a retarder system to serve as a secondary braking system for the apparatus. The system will be programmed at 1/3 at 4-psi brake pressure, an additional 1/3 at 7-psi brake pressure and full operation at 10-psi brake pressure.
- 2.81 In addition to the transmission retarder feature, the transmission will be programmed to aggressively downshift with the release of the accelerator pedal.

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- 2.82 The transmission will be controlled in the cab through the use of a "T" handle style shifter. The shifter will be located within easy reach of the driver.
- 2.83 A transmission temperature gauge with red light and audible alarm will be located on the driver's dash.
- 2.84 An external transmission oil cooler will be provided.
- 2.85 The transmission will be provided with high quality synthetic transmission fluid.

3.00 CAB

- 3.01 The cab will be designed to safely accommodate five seated firefighters.
- 3.02 The cab will have four side opening doors to allow access in and out of the cab.
- 3.03 The cab is to be constructed of aluminum and specifically designed for use within the fire service.
- 3.04 The cab is to be supported by an extruded aluminum frame. The skin of the cab is to be no less than 1/8 (1.0125) inch 5000 series or 3/16 (0.1875) inch 3000 series aluminum.
- 3.05 The cab will be provided with insulation between the outer wall skin and the interior wall finish.
- 3.06 The cab floor will be constructed of aluminum.
- 3.07 The entire underside of the cab will be insulated to isolate noise and heat from the motor and drive line from entering the interior space of the cab.
- 3.08 The roof will be provided with an overlay of bright aluminum tread plate.
- 3.09 The rear wall of the cab is to be provided with an exterior overlay of bright aluminum tread plate.
- 3.10 The cab is to be capable of being tilted forward to allow access to the engine.
- 3.11 The mechanism for tilting the cab will consist of an electric over hydraulic pump will be used to raise the cab should the electrically operated pump fail. The cylinder(s) used to raise the cab will be provided with check valves positioned onto the cylinder(s) to prevent unwanted lowering of the cab.
- 3.12 A fixed positioned, cab lift control, will be provided behind the access door located next near the front right, curb side, portion of the fire body.
- 3.13 The cab is to be provided with a positive latch to secure the cab once it has been fully raised.
- 3.14 The cab lift controls will be positioned onto an attached cord with a remote switch. The attached cord will be long enough to allow the operator to stand slightly ahead and to the side of the cab to observe the cab in relation to overhead obstructions. The Vendor will describe the attachment, cord, cord length, and switch.
- 3.15 A manually operated, emergency cab lift pump will be provided in a convenient location to allow the cab to be tilted upward should the normal system fail or otherwise become inoperable.
- 3.16 The cab is to be locked down by an automatic lock or latch mechanism that actuates after the cab has been lowered.
- 3.17 The cab will be designed with an access panel to allow inspection of the motor and to facilitate fluid checks and maintenance without the need of tilting the cab.

CAB GLASS AND MIRRORS

- 3.18 The windshield is to be tinted safety glass.
- 3.19 The windshield will have two, one each side, two-speed electric windshield wipers. The wipers are to have "return to park" provisions and will meet all current FMVSS requirements. Wipers are to have intermediate, slow and fast wiper speed controls. Wipers are to also include a washer actuated by the wiper control.
- 3.20 The front doors serving the driver and officer will be electrically operated tinted glass. The vent window will be fixed.

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- 3.21 The side windows between the front doors and rear doors are to be fixed and provided with the darkest shade tint, "limo tint," possible.
- 3.22 The rear cab doors will have electrically operated tinted windows.
- 3.23 Two tinted sun visors, one for each windshield, will be provided.
- 3.24 The cab will be provided with externally mounted RAMCO bus style polished aluminum or stainless steel support arms and housings with mirrors mounted onto the front corners of the cab. A convex mirror will be located at the bottom of the primary mirror. The mirrors will be electrically operated from the driver's position and will be electrically heated.
- 3.25 The mirrors should include LED arrows that illuminate and flash with the applicable turn signal or four way flashers.
- 3.26 The mirrors may be provided with integrated cameras that operate with the turn signal. If this feature is selected, the right side camera described in the specifications herein by be discarded. See paragraphs 4.09.36; 12.12 and 12.13.

CAB DOORS, STEPS AND HANDLES

- 3.27 All four cab access doors are to be provided with "L" style door handles on the outside with stainless steel scuff plates located behind and adjacent to the handle to help protect the paint.
- 3.28 The interior cab door handles will be paddle type.
- 3.29 All four cab access doors are to be provided with stainless steel interior panels.
- 3.30 The front two doors will be provided with map pockets.
- 3.31 The bottom interior face of the cab doors will be provided with a reflective chevron style image with reflective red and lime yellow material.
- 3.32 The lower portion of the cab doors will be provided with two LED lights that will operate while the door is opened. The red light will flash while the door is opened.
- 3.33 The cab doors will be operated with stainless steel piano hinges that use no less than a ¼ inch pin. The hinges will not be welded to the cab or to the door.
- 3.34 The Access steps into the cab are to be no less than 8-inches deep or greater than 18-inches in height between steps. The distance between the ground and the first step is to be no greater than 24 inches.
- 3.35 Externally mounted, assist steps will be provided beneath each of the cab doors to provide a lower step height into the cab.
- 3.36 Hand rails of no less than 18-inches will be provided in a vertical position on the exterior of the cab near the latch side of the door. The hand rails are to be provided with a slip resistant finish or covering.
- 3.37 The front right or officer's door will be provided with a vertically mounted molded handle that is mounted onto the "A" or corner post to assist entrance into the cab.
- 3.38 The rear doors will be provided with molded handles that are mounted onto the latch side of the interior door opening to assist entrance into the cab.
- 3.39 Horizontally mounted hand rails will be attached to the rear doors and positioned near the bottom of the glass.

INTERIOR FINISH

- 3.40 With the exception of the stainless steel trim, the metal surfaces within the interior of the cab will be painted a Zolatone gray color.
- 3.41 The seats and upholstery will be gray in color.
- 3.42 The aluminum floor deck will be covered by an abrasion resistant composite material to provide insulation, sound dampening, and slip resistance.
- 3.43 The engine cover will be insulated and covered with vinyl to provide the greatest heat and sound reduction. The sides of the cover will be tapered at the top to provide the greatest elbow room for the driver and front right passenger.
- 3.44 The interior walls will be finished with a vinyl type covering to provide additional insulation and sound dampening within the cab.

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SEATS, SCBA STORAGE & HELMET STORAGE

- 3.45 The seats will be finished with Seats, Inc. Imperial 1200 material.
- 3.46 The driver's seat will be a Seats, Inc. Series 911 electrically operated driver's seat. The seat will have a high profile back rest, complete ride suspension adjustments, back angle and adjustment forward and backwards.
- 3.47 The front right or officer's seat will be a Seats, Inc. Series 911 fixed seat containing an SCB with a hinged headrest pad.
- 3.48 If possible, the front seats will be placed upon a pedestal that will include a storage area that includes a hinged door positioned on the open side nearest the cab door.
- 3.49 The seating arrangement in the rear of the cab will consist of one rear facing seat located directly behind the front right passenger or officer and two forward facing SCBA containing flip down seats located inboard and positioned directly against the rear wall of the cab. Each of the seats will include a hinged headrest pad.
- 3.50 Each of the rear seats will be placed upon pedestals that are supported to the floor and are designed to provide storage beneath the seat area.
- 3.51 Each of the SCBA seats will be provided with removable padded covers to improve comfort while riding in the seat without interfacing the SCBA.
- 3.52 Each of the SCBA seats will be provided with Ziamatic Quic-Hold mechanical bracket model no. MWAB-5 SCBA brackets for 5.25 to 5.6 inch diameter cylinders.
- 3.53 A Ziamatic Quic-Hold mechanical bracket model no. MWAB-5 will be provided on the back side of the map box with the intended use to store the driver's SCBA. The bracket will not include a seat.
- 3.54 Each of the Ziamatic Quic-Hold mechanical brackets will be provided with fabric webbing type release straps that will operate the bracket from the upper portion of the seat.
- 3.55 All seats within the cab will be provided with three-point inertia type seat belts with automatic retraction devices and semi-rigid extensions to maintain the connection in a position for easy access. The belts used for the seatbelts will be bright orange in color.
- 3.56 Five Zico model UHH-1-C universal helmet holders will be provided and installed into the cab. The specific location of installation will be identified during the final inspection.

STORAGE INSIDE THE CAB

- 3.57 A secure map box, with three interior shelves and drop down access doors, will be provided between the driver and officer. The map box will be suspended to provide access to the top of the engine cover.
- 3.58 A medical storage cabinet will be located inside the cab directly behind the driver. The cabinet will be finished with Zolatone gray paint.
- 3.59 The medical cabinet will be as large as possible and will reach a height near the underside of the roof. The interior of the cabinet will be provided with two adjustable shelves.
- 3.60 The medical cabinet will be accessed through a ROM AutoLatch shutter type door. The inside of the cabinet will be provided with ROM adjustable door lighting.

STEERING

- 3.61 The steering wheel is to be a six or seven-position tilt and telescopic type steering column. The design of the steering column will use a manually operated locking lever to allow adjustment of tilt and telescopic position.
- The telescopic function will not be managed by a rotational tension of the center steering hub of the steering wheel.
- 3.62 The steering wheel is to be no less than 18-inches in diameter.

ENVIRONMENTAL

- 3.63 The cab will be provided with an air conditioning system. The system will consist of one or more air compressors and condensing units. It will have the ability to cool the cab from 100 degrees F to 70 degrees F within 30-minutes.
- 3.64 The air conditioning condenser will be painted the job color.
- 3.65 The cab will be provided with no less than 75,000 BTU of heat within the cab for the purpose of heating the cab and defrosting windows. The heating system will include the ability to heat the floor areas in both the front and rear portions of the cab.

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3.66 The heating system will be designed to provide heat to feet for the front seat area of the cab.

4.00 ELECTRICAL FOR THE CAB AND CHASSIS

- 4.01 "As Built" electrical diagrams and data will be provided for each individual apparatus. The "As Builts" are to serve as an accurate and precise map of the electrical system with the technical description of the related components. The drawings will be in color and accurately describe the color, number and function of each conductor or component.
- 4.02 All wiring will be color coded and provided with number and function coded or labeled every four inches in length.
- 4.03 The cab and chassis will be fully multiplexed. Additional description of the multiplex system will be provided in chapter 9 of the specifications herein.
- 4.04 All wire terminations will be coated or sealed with dielectric type grease or sealer to prevent corrosion, including battery posts.
- 4.05 Unless otherwise specified, all circuits are to be protected with automatic resetting type circuit breakers. Fusible links are not to be used.
- 4.06 Individual loads are not to exceed the electrical switch manufacturer's component amperage ratings. Relays will be used for heavy loads.

INTERIOR INSTRUMENTS AND LIGHTS

- 4.07 All electrical components and systems will be installed by the apparatus manufacturer and operated during the performance test of the electrical system. This is to include the radio, communications system and scene lights.
- 4.08 The interior cab lights will include the following:
 - 4.08.01 Courtesy lights will be placed in the step area of each cab door opening. The lights will be LED type and will automatically operate with the opening of the door.
 - 4.08.02 Combination white and red LED type lights will be located on the ceiling above each door opening. The white light will automatically operate when the cab doors are opened. The light fixtures will have integral switches for each of the two lights for individual usage.
 - 4.08.03 One dual head directional reading light will be located on the underside of the upper instrument console between the driver and officer.
 - 4.08.04 The underside of the cab over the engine will be provided with two LED lights that automatically operate when the cab is lifted and the master battery switch is turned on.
- 4.09 The driver's instruments and controls are to be conveniently located within view and reach of the driver. The gauges, instruments and switches will be installed onto removable panels for ease of service. The following will be provided:
 - 4.09.01 Electric tachometer with an integral engine hour meter
 - 4.09.02 Speedometer with integral odometer
 - 4.09.03 Engine oil pressure gauge with red warning light and audible alarm
 - 4.09.04 Air pressure gauge(s) to show the air pressure for the front and rear air systems. This may be obtained with one gauge having two indicator needles or two gauges. A red warning light with audible alarm will be included for "low air pressure"
 - 4.09.05 Fuel gauge
 - 4.09.06 Parking brake control with indicator light
 - 4.09.07 Master battery switch
 - 4.09.08 Ignition switch with indicator light
 - 4.09.09 Starter switch or control
 - 4.09.10 Heater/defroster control
 - 4.09.11 Headlight switch
 - 4.09.12 Self-canceling turn signal switch (arm) with visual and audio indicators. Headlight dimmer switch is to be incorporated into the turn signal arm.
 - 4.09.13 Warning light switch panel
 - 4.09.14 Horn button on the center hub of the steering wheel
 - 4.09.15 Selector switch for dual electric horn and air horns
 - 4.09.16 Air restriction indicator, electronic with indicator warning light
 - 4.09.17 Automatic transmission oil temperature gauge with warning light and audible alarm
 - 4.09.18 Engine coolant temperature with an indicator light and audible alarm for low coolant or excessive heat
 - 4.09.19 Voltmeter with warning light and audible alarm indicating high or low voltage

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- 4.09.20 Ammeter
- 4.09.21 Windshield wiper controls with selection of intermittent, slow and fast speed
- 4.09.22 Windshield washer controls
- 4.09.23 Compartment and cab door open warning light
- 4.09.24 Manually thrown, electronically operated, high engine idle switch
- 4.09.25 Operating switch for the transmission retarder
- 4.09.26 Switches to control the rear axle differential
- 4.09.27 Switch to override the Automatic Traction Control (ATC)
- 4.09.28 Indicator light for disabled or problems related to the Anti-lock Braking System (ABS)
- 4.09.29 A switch to test the operation of the dash indicator lights
- 4.09.30 Engine hour meter if not included with the tachometer
- 4.09.31 Switch to engage the Power Take Off (PTO) for the generator
- 4.09.32 Switch to engage the Power Take Off (PTO) for the aerial device
- 4.09.33 Switches to operate the fire pump
- 4.09.34 Selector switch to control each of the two mirrors with controls for heating the mirrors
- 4.09.35 Switches for the left and the right alley lights. This will simultaneously operate the lights on the side of the cab as well as the alley lights positioned in the front roof mounted light bar.
- 4.09.36 The multiplex display will be within reach and view of the driver.
- 4.09.37 The vehicle camera screens for the right side and rear facing will be within easy view and reach of the driver

- 4.10 The following instruments and controls will be placed in front of the front right passenger or officer:
 - 4.10.01 Officer speedometer
 - 4.10.02 Digital clock
 - 4.10.03 Weldon V-MUX Occupant Restraint Indicator
 - 4.10.04 Two 12-volt power outlets

- 4.11 The vehicle will be provided with a "door ajar" warning system that produces a visual warning if a cab door, compartment door, slide out tray, ladder, stabilizer or other system is opened or not otherwise properly stowed when the parking brake is released. The system will use an LED light that is within view of both the driver and officer.

- 4.12 The instrument panel controls and switches are to be identified as to function by imprinted word(s) located adjacent to the switch or instrument

- 4.13 The chassis will be provided with dual electric automotive horns. The horns are to be operated the steering wheel center ring.

- 4.14 Two 6-inch auxiliary fans with individual switches are to be provided at the center of the cab near the windshield beneath the overhead instrument panel.

- 4.15 An LED gooseneck map light will be provided on the dash ahead and to the left of the front right passenger.

- 4.16 The apparatus manufacturer will provide a 12-volt power stud and a grounding stud in the electrical compartment for a two-way Fire Department radio. The power provided to the radio will be disengaged when the Master battery switch is turned to the "off" position.

- 4.17 An additional power stud will be provided for the radio. The stud will be a 12-volt Positive and will be connected directly to the battery with over-current protection to provide a continuous power supply for the two-way Fire Department radio memory.

- 4.18 A noise suppression filter will be provided with the chassis electrical system to eliminate unwanted noise produced over the radio and headset intercom system.

- 4.19 A positive and ground power stud will be located near the front right corner of the cab for future support of a computer or MDT.

- 4.20 Emergency lighting and warning devices will be operated by switches describe in the chapter for warning devices. The switches and controls will be mounted on removable panels to allow easy access and maintenance.

- 4.21 Instrument panel gauges, vehicle lights, and other electrical accessories will have proper sized wiring to accommodate expected current loads. Wiring will meet SAE J-1128 specifications for high temperature (250° F minimum) conditions.

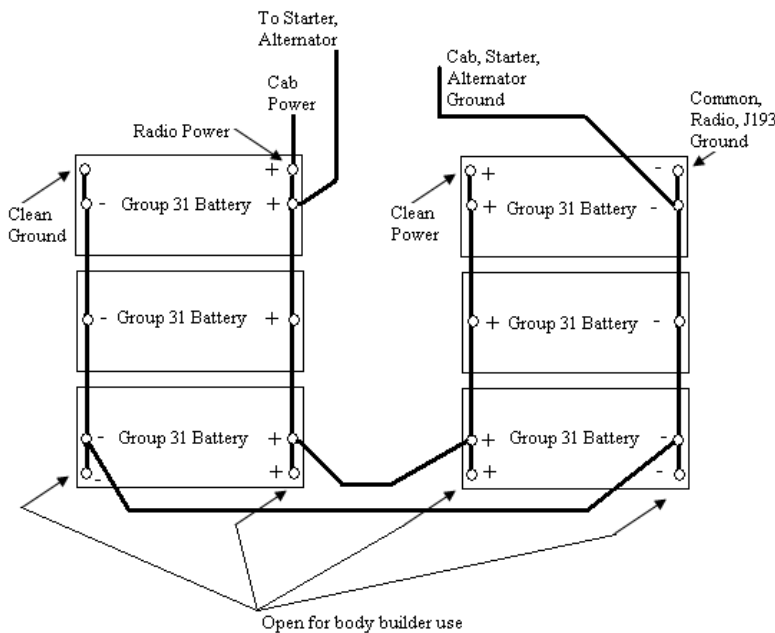
- 4.22 All wiring methods will be in conformance with applicable Society of Automotive Engineers (SAE) standards. The acquisition of data from various electronic systems will be made through approved connection points. The tapping or splicing of data linkage wires or cables between electronic components such as the engine, transmission, WABCO, Telma retarder, Pump, and other similar components is strictly prohibited.

- 4.23 A compartment will be provided to house the electrical control center of the vehicle. The control center will contain electrical wiring junctions, terminal strips, flashers, and other necessary components. The compartment is to be readily accessible for ease of maintenance.

- 4.24 A diagram of the power distribution and circuit protection system will be provided and attached to the electrical control center of the vehicle. This diagram may be installed in, on, or near the control center.

BATTERY AND ALTERNATOR

- 4.25 The solenoid(s) controlled by the Master Battery Switch will be enclosed in an approved weather-proof plastic enclosure.
- 4.26 The battery system will consist of two banks of three (3) Group 31, deep cycle, maintenance free batteries manufactured by Delco. Each battery will provide a minimum Cold Cranking Amps (CCA) of 1,000. All batteries will be of the same manufacture and model. All batteries will be high cycling type with threaded posts.
- 4.27 The batteries will be wired in a cross-charging method whereby the alternator positive lead will be connected to the first battery on the driver's side of the apparatus and the alternator negative will be connected to the first battery on the passenger's side. This battery connection method is intended to obtain even charging and discharging of all six batteries.



- 4.28 The batteries will be arranged as 12/12 system with a negative (-) ground.
- 4.29 The batteries will be installed in a protected and well-ventilated location that is outside of the passenger compartment. The top of the batteries will be positioned where they will be easily accessed for periodic inspection and maintenance.
- 4.30 The batteries will be mounted onto a non-corrosive mat.
- 4.31 Heavy-duty multi-strand battery cables, or solid copper buss bars, are to be used to provide maximum power to the electrical system. Cables will be color-coded, red for positive and black for negative. Battery terminal connections are to be coated with an anti-corrosive compound.
- 4.32 Jumper studs will be provided in an easily accessed are, preferably in the step well of the left rear door, front bumper, or beneath the cab near the left rear corner. The suds will be directly wired to the batteries.
- 4.33 A Kussmaul 40Amp battery charger with internal battery saver will be provided. In addition to maintaining the batteries, the charger will be used to provide five (5) amps of 12-volt power for auxiliary radio and flashlight battery chargers.
- 4.34 A display bar graph, indicating the state of charge, will be provided on the left side of the driver's seat riser to show if the charger is operating and the status of the batteries.
- 4.35 A Kussmaul 20 amp Super Auto Eject automatic power line disconnect will be provided. The unit will use a 120-volt, 20 amp, and NEMA 5-20 connector. The unit will be provided with an auto-eject interrupter and the mating female connection for the unit. The unit will be installed onto the exterior cab wall, just behind the driver's door. The cover for the unit will be yellow.

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- 4.36 The Kussmaul Super Auto Eject will be mounted onto a polished stainless steel cover plate that is fully removable from the outside of the cab. It is the intent of this plate to allow the Super Auto Eject device to be serviced or replaced from the outside instead of removing interior components of the cab.
- 4.37 A 110-volt duplex receptacle will be provided within the medical compartment. The source of power for the receptacles will be provided by the vehicle's shoreline.
- 4.38 A 110-volt duplex receptacle will be provided within a forward right, curb side, compartment. The specific location will be provided at the time of the pre-construction meeting. The source of power for the receptacles will be provided by the vehicle's shoreline.
- 4.39 The vehicle's alternator will be protected by wiring it directly to the batteries or battery isolator. The alternator will not be wired through the master load disconnect switch.
- 4.40 The vehicle alternator will be a C.E. Niefhoff model 14-volt 340 amp alternator. An alternate is strongly discouraged.
- 4.41 The multiplexing system will manage the electrical loads in a manner similar to a load manager. The system will provide load sequencing and shedding, monitor both batteries, provide fast idle activation for improved alternator output, over-voltage indication, automatic or manually reset circuits, and a flashing warning light for low voltage and battery discharge.
- 4.42 The multiplexing system will shed the loads in the following manner:
- | LOAD LEVEL | VOLTAGE | SYSTEM(S) TO SHED |
|------------|---------|--|
| 1 | 12.20 | Air conditioning (rear) condenser and cab blower fan |
| 2 | 11.95 | Air conditioning (front) condenser and cab blower |
| 3 | 11.70 | Flashing headlights |
| 4 | 11.45 | Under body lights |
| 5 | 11.25 | Spot and scene lights |
| 6 | 11.10 | Compartment lights |
| 7 | 10.95 | Lower level halogen warning lights |
- 4.43 All multi-plex nodes will be suitably protected from excess exposure to water, dirt and physical abuse.
- 4.44 A master battery switch will be installed in a convenient location for the driver. An indicator light is to be provided on the instrument panel to notify the driver of the battery system status as either "on" or "off."

EXTERIOR CAB LIGHTING

- 4.45 Exterior lighting, including marker and clearance lighting, will be provided and will meet or exceed the federal, state and NFPA requirements. All marker and clearance lighting will be LED type.
- 4.46 The headlights will use a standard rectangular shaped headlight, or a standard replaceable automotive headlight bulb mounted into a headlight assembly. If available, the headlights will be LED type. However the headlights will be provided with sufficient gauge wire to carry the load for halogen lamps.
- 4.47 The headlight system will be equipped with a day time running light feature that automatically turns the headlights on during the daylight hours.
- 4.48 The chassis will be provided with fixtures for headlights and turn/warning lights on the front face of the cab. The headlights will be positioned in the lower tier of lights and the upper tier of lights will be used for the turn signal and warning lights.
- 4.49 The front turn signals are to be Whelen mode 60A00TAR or equal, LED lamp, amber in color, populated in the shape of an arrow with a black outline.
- 4.50 All standard positioned clearance and marker lights mounted onto the cab will be LED type manufactured by Weldon or Truck-Lite.
- 4.51 Underbody lights will be provided under each cab access door. The lights will automatically operate upon opening of any cab door or engagement of the parking brake. The light fixtures will be LED type, clear or white and manufactured by Weldon or Truck-Lite.
- 4.52 Two, one each side, Whelen model 60COELZR 12 diode, gradient 8°-32° Super –LED scene light with chrome housing will be provided near the roof line between the driver's door and fixed side window located between the front and rear doors. Each fixture will be operated with the "alley" light switch for each side of the apparatus.
- 4.53 Two, one each side, remote control operated, Go-Light Radioray model 2000, will be mounted on the roof above the door latch side of the two front doors. The Go-Lights will be operated by controls positioned in front of the front right passenger.

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5.00 FIRE BODY

- 5.01 The fire body will be constructed of aluminum that incorporates an extruded frame to provide skeletal support for the compartments.
- 5.02 The skin of the cab is to be no less than 1/8 (1.0125) inch 5000 series or 3/16 (0.1875) inch 3000 series aluminum.
- 5.03 The rear wheel wells will be provided with full circular inner fender liners manufactured of aluminum.
- 5.04 The rear wheel wells will be provided with flexible rubber fender crowns that extend outward from the body two to three inches to provide protection to the body.
- 5.05 The body skin around the rear wheels will consist of aluminum tread plate.
- 5.06 Heavy-duty mud flaps will be provided directly behind the rear wheels. The mud flaps will be installed in a manner that will not damage the inner wheel well liner if they are torn off when pinched by an obstruction such as a concrete bumper stop and the tire while the apparatus is backing.
- 5.07 The fire body will be provided with aluminum 1" x 2" solid bar stock spaced outward from the fire body. The ends of the rub rail will be cut at an angle and de-burred to provide a finished appearance. This is highly preferred over traditional "C" channel type rub rail.
- 5.08 A rubber liner, or similar material, will be placed between the body and the chassis frame to prevent electrolysis between the frame and the structural supports of the fire body.
- 5.09 The body will be attached to the chassis frame through a series of appropriate assemblies and bolts. The body will not be welded to the frame.
- 5.10 Isolating tape, gaskets or other similar materials will be used to separate dissimilar metals from contact with each other in an effort to reduce the risk of electrolysis. Paint will not be considered as a suitable barrier.
- 5.11 All compartments are to be ventilated and provided with drain holes. Vents are not to be made into the compartment door.
- 5.12 All vent opening and access panels will be de-burred to prevent sharp edges from causing injury to personnel or equipment.
- 5.13 The use of self-tapping screws for assembly of the body or body parts is discouraged and will not be used in securing equipment brackets or items that will experience frequent exercise or stress.
- 5.14 All compartments are to have sweep out type compartment floors. In relation to the door opening, the floor is raised above the compartment door opening.
- 5.15 All screws and bolts that protrude into the compartment will have acorn nuts at the ends to prevent injury to equipment and personnel.
- 5.16 Each compartment floor is to be designed and constructed to manage a continuous storage load of no less than 500 pounds.
- 5.17 Unless otherwise specified, all adjustable shelves will be constructed of aluminum with an upward flange of no less than 1-inch nor more than 2-inches turned upward to create a tray.
- 5.18 Each upward flange of a tray or shelf facing the outside of the compartment will be provided with lime yellow reflective trim across its entire surface.
- 5.19 Each adjustable shelf will be secured into place through the use of adjustable slide tracks located at each corner. The shelf is to be capable of safely supporting a load of 100-pounds without damage to the shelf or the associated tracks.
- ZICO model QDD-72 adjustable base channel will not be used.
- 5.20 All slide out trays will be capable of being extended outside the compartment by 100% of its original stowed position. The assembled slide out tray and slide rails will have a load capacity of no less than 500-pounds while fully extended outside the compartment. The edges of the slide out trays are to be no less than 1-1/2 inches nor more than 3 inches in height.
- 5.21 The desired slide-out trays and steps are to be On-Scene Solutions aluminum slide out glides and tray.

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- 5.22 Swing out tool boards will be a wire grid from Gear Grid that will provide five surfaces for mounting of tools.
- 5.23 The compartment doors will be provided with latches that are operated with polished stainless steel D-ring style twist lock devices with a slight bend outward from the door for improved access during use. The latch handle hardware will be recessed in the door.
- 5.24 All compartment doors with horizontally hinged lift-up compartment doors will be provided with two struts to hold the door in the open position.
- 5.25 Each compartment shelf, tray or compartment floor will be provided with black Turtle Tile to provide an air space between the stored equipment and the surface of the tray, shelf or floor.
- 5.26 The compartments will be labeled numerically from the front of the apparatus rearward. The alpha character preceding the number identifies the side of the apparatus as either left or right. The left side represents the driver's side and the right represents the curb or officer's side.
- 5.27 The fire body will provide no less than 150 cubic feet of equipment storage excluding compartment specifically designed or intended for SCBA or oxygen cylinder storage.
- 5.28 With the apparatus parked on a flat level surface, the fire body provided no less than 100 lineal inches of lower compartment space for heavy equipment where the compartment is no greater than 28 inches from grade with compartment height of no less than 26 inches and depth of no less than 23 inches.
- 5.29 Paragraphs 5.29 through 5.47 are representative of compartments that are known and recognized by the Tulsa Fire Department. The specific configuration and size of compartments may be different but should provide the near equivalency in space and concept.
- 5.30 L-1 will have an opening of approximately 15.5" wide by 9" tall and a storage area of approximately 15.5" wide by 9" high by 18" deep located near the lower portion of the front right stabilizer jack. The compartment will have one vertically hinged door. (1.45 cubic feet)
- 5.31 L-2 will have an opening of approximately 9.5" wide by 6" tall and a storage area of approximately 9.5" wide by 6" high by 17" deep. The compartment is located above the forward left rear wheels and will have one vertically hinged door. (0.56 cubic feet)
- 5.32 L-3 will have an opening of approximately 52" wide by 33.5" tall and a storage area of approximately 52" wide by 33.5" tall by 26" deep in the lower portion and 15" deep in the upper. The compartment is located above the left rear wheel and will have two vertically hinged doors. (26.21 cubic feet)
- 5.33 L-4 will have an opening of approximately 42.5" wide by 20.5" high and the storage area of approximately 42.5" wide by 20.5" high by 26" deep. The compartment is located above the left rear wheel and will have one horizontally hinged lift-up compartment door. (13.10 cubic feet)
- 5.34 L-5 will have an opening of approximately 43.5" wide by 49.5" high and a storage area of approximately 43.5" wide by 49.5" high x 19" deep. The compartment is located behind the left rear wheels and will have two vertically hinged doors. The compartment will be provided with one floor mounted slide out tray and one tool board. (23.68 cubic feet)
- 5.35 L-6 will have an opening of approximately 14" wide by 23.5" high and a storage area of approximately 14" wide by 23.5" high by 18" deep. The compartment is located on the left side near the rear of the body ahead of the left rear stabilizer jack. The compartment will have one vertically hinged compartment door. (3.42 cubic feet)
- 5.36 R-1 will have an opening of approximately 15.5" wide by 18" high and a storage area of approximately 15.5" wide by 18" high and 18" deep. The compartment is located near the bottom of the right rear stabilizer and will have one vertically hinged compartment door. (2.91 cubic feet)
- 5.37 R-2 will have an opening of approximately 46" wide by 12.5" high and a storage area of approximately 46" wide by 12.5" high and 14" deep. The compartment is located on the right side opposite of the pump panel and will have a single horizontally hinged lift-up door. (4.66 cubic feet)
- 5.38 R-3 will have an opening of approximately 13" wide by 36" high and a storage area of approximately 13" wide by 36" high by 20" deep. The compartment is located on the right side near the rearward portion of the pump panel area and will have one vertically hinged compartment door. (5.42 cubic feet)
- 5.39 R-4 will have an opening of approximately 9.5" wide by 6" tall and a storage area of approximately 9.5" wide by 6" high by 25" deep. The compartment is located on the right side above the forward right rear wheels and will have one vertically hinged door. (0.82 cubic feet)

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- 5.40 R-5 will have an opening of approximately 52" wide by 33.5" tall and a storage area of approximately 52" wide by 33.5" tall by 26" deep in the lower portion and 26" deep in the upper. The compartment is located above the right rear wheel and will have two vertically hinged doors. The compartment will be provided with one adjustable shelf. (26.21 cubic feet)
- 5.41 R-6 will have an opening of approximately 42.5" wide by 20.5" high and the storage area of approximately 42.5" wide by 20.5" high by 20.5" deep in the lower portion and 9.5 in the upper. The compartment is located above the right rear wheel and will have one horizontally hinged lift-up compartment door. (10.34 cubic feet)
- 5.42 R-7 will have an opening of approximately 41" wide by 49.5" high and a storage area of approximately 41" wide by 49.5 high x 24" deep in the lower portion and 8.5" deep in the upper. The compartment is located behind the right rear wheels and will have two vertically hinged doors. The compartment will be provided with one floor mounted slide out tray and one adjustable shelf. (28.19 cubic feet)
- 5.43 R-8 will have an opening of approximately 16.5" wide by 22" high and a storage area of approximately 16.5" wide by 22" high by 8" deep. The compartment is located on the right side near the rear of the body ahead of the right rear stabilizer jack. The compartment will have one vertically hinged compartment door. (1.68 cubic feet)
- 5.44 R-9 will have an opening of approximately 17.5" wide by 46.5" high and a storage area of approximately 17.5" by 46.5" high by 23" deep in the lower and 8.5" in the upper portion. The compartment is located on the right side at the extreme rear corner of the apparatus. The compartment will have one 250-lb slide out tray designed to specifically accommodate fire extinguishers. (9.11 cubic feet)
- 5.45 The lower portion of compartment R-9 will be subdivided to create horizontal storage of fire extinguishers. This will include a 20-lb Carbon Dioxide, 20-lb stored pressure dry chemical, and a 2-1/2 gallon air-pressurized extinguisher. It will also be used to store traffic cones and traffic management materials. Specific details of the storage system will be provided at the pre-construction meeting.
- 5.46 R-9 will be provided with one upper and one lower adjustable shelf.
- 5.47 The rear of the apparatus will be provided with compartment with a horizontally hinged lift-up compartment door to contain the ground ladders. This will specifically contain the following:
One 2 section 35ft
One 2 section 24ft
One 2 section 12ft
One 18ft roof
One 16ft roof
One 10ft attic
One backboard
The preferred ground ladders are manufactured by Duo-Safety.
- 5.48 The ground ladder storage area will also contain the following pike poles:
One 6-ft
One 8-ft
One 10-ft
One 12-ft
The preferred pike poles are round type manufactured by Duo-Safety.
- 5.49 The rear of the apparatus will be provided with skids, casters or design to prevent the rear facing rub rail and body to be damaged should the rear of the apparatus come into contact with the road surface.
- 5.50 All steps and walking surfaces are to be provided with an aluminum tread plate material that provides the slip resistance required by NFPA 1901.
- 5.51 An access stair will be provided on the left side immediately aft the pump panel for access to the platform. The steps will be constructed of aluminum with an anti-slip surface. The step design will be compliant with the requirements of NFPA 1901.
- 5.52 An access stair will be provided on the left side at the rear of the apparatus for access to the turntable. The steps will be constructed of aluminum with an anti-slip surface. The step design will be compliant with the requirements of NFPA 1901.
- 5.53 Both sets of stairs will be provided with a slide out and down step to provide an additional step once the apparatus has been set up in which the body may be elevated from its original position. This additional step will otherwise be securely stowed to prevent damage while not in use.
- 5.54 Both sets of stairs will be provided with hand rails that are designed, manufactured and placed in compliance with NFPA 1901.

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- 5.55 Spare SCBA cylinder storage will be built into the rear wheel area of the fire body. Each side will have the ability to store two cylinders behind brushed aluminum hinged compartment doors manufactured by Cast Products or equal.
- 5.56 A hose bed will be created into the main body of the apparatus with a discharge point located on the right (curb) side at the rear of the apparatus. The hose bed will hold no less than 800-ft of 3-inch double jacket fire hose.
- 5.57 The rear face of the body and compartment doors will be smooth and finished with a reflective chevron. The details on the chevron will be provided in Section 13 of these specifications.
- 5.58 The rear of the apparatus will be provided with an illuminated license plate bracket.
- 5.59 A standing platform will be provided for the left (driver's side) pump panel. Stowed beneath the pump panel, the platform will be used while the aerial device is in operation. The platform will support no less than 500-lbs while fully extended out from beneath the pump house. The glides used for the steps will be provided by On-Scene Solutions.
- 5.60 A standing platform will be provided for the right (passenger's side) pump panel. Stowed beneath the pump panel, the platform will be used while the aerial device is in operation. The platform will support no less than 500-lbs while fully extended out from beneath the pump house. The glides used for the steps will be provided by On-Scene Solutions.
- 5.61 Pre-connected hose lines will be provided in a cross lay fashion over the front stabilizers of the fire body. An aluminum baffle board will be provided to separate the three hose beds.
- 5.62 From the front of the apparatus to the rear, pre-connect 1 will be the most forward. This hose bed will be no less than 6-inches in width with a height that matches the remainder of the compartment space.
- 5.63 Pre-connects 2 and 3 will represent the middle and rear most hose beds. Each of the two beds will be as wide as possible, but no less than 4-inches, with a height that matches the other hose bed and remainder of the compartment space.
- 5.64 A supply line hose bed will be provided. It will have the ability to store no less than 800-ft of 3-inch double jacket fire hose coupled in 50-ft lengths. The hose will be stored ahead of the turntable with the deployment opening at the rear of the apparatus.
- 5.65 The supply line hose bed will be provided with one adjustable hose bed divider.
- 5.66 Each of the hose beds for the pre-connected hose lines, as well as the supply line, will be provided with an aluminum deck to allow the hose to rest upon so that water may drain off and away from the stored hose.
- 5.67 The hose beds will be provided with a vinyl cover that is black in color, designed to protect and contain the hose within the bed.

6.00 ELECTRICAL FOR FIRE BODY

- 6.01 "As Built" electrical diagrams will be provided for each individual apparatus.
- 6.02 All wiring used for the fire body will be identified by color, number and function at intervals of no greater than every four inches.
- 6.03 The fire body will be fully multiplexed with the same system as used with the chassis.
- 6.04 All wire terminations will be coated and sealed with a dielectric grease or sealer to prevent corrosion.
- 6.05 Unless specified otherwise, all circuits are to be protected with automatic resetting circuit breaks. Fusible links are not to be used.
- 6.06 Individual loads are not to exceed the electrical switch manufacturer's component amperage ratings. Relays will be used for heavy loads.
- 6.07 All electrical components and systems will be installed by the apparatus manufacturer and operated during the performance test of the electrical system. This is to include the radio, communications system, and scene lights.
- 6.08 Exterior lighting, including marker and clearance lighting, will be provided and will meet or exceed the federal, state and NFPA requirements for the fire body. All marker and clearance lighting will be LED type.
- 6.09 Britax rubber red/amber LED marker lights extending from the rear corners of the apparatus will be provided.

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- 6.10 A Weldon auxiliary turn signal, model 9186-8580 LED (PR) will be located at the center of the rear wheels.
- 6.11 The rear tail light assembly will be a Whelen CAST3 polished cast aluminum three light-head fixture for 600 series LED type lights. The assembly will contain a Whelen 60C00WCR maximum intensity back up light, Whelen 60R00XRR maximum intensity brake/tail light, and Whelen 60A00TAC maximum intensity turn signal populated in the shape of an arrow.
- 6.12 Two, one each side, Zico backing light (PR) with polished stainless steel housing, model ZQL-SS-H7614, will be located at the center of the rear wheel well.
- 6.13 A third brake light will be provided, near the top of, or on the body above, the ground ladder compartment and will consist of a Whelen Strip-Lite model PSR00XRR brake/tail lamp.
- 6.14 A solid state electronic audible back-up alarm that automatically operates when the transmission is shifted into reverse will be provided at the rear of the apparatus.
- 6.15 The rear of the apparatus will be provided with an illuminated license plate bracket.
- 6.16 Under body lights, LED type, will be provided beneath the body and aimed towards the walking space next to the apparatus. The lights will automatically operate with engagement of the parking brake. The lights will be positioned at the following locations:
- 6.16.01 Two beneath the front bumper facing forward
 - 6.16.02 Two, one each side facing outward to the side, gravel shield of the front bumper
 - 6.16.03 One beneath each door as previously described.
 - 6.16.04 Two, one each side facing outward to the side, area of the pump panel ahead of the rear wheels.
 - 6.16.05 Two, one each side facing outward to the side, behind the rear wheels
 - 6.16.06 Two, one each side facing outward, at the rear of the apparatus
 - 6.16.08 Two rear facing at the back of the apparatus
- 6.17 The stairs or steps leading to the platform as well as those leading to the turn table will be provided with LED lights that automatically operate with the headlight switch.
- 6.18 Two, one each side, Whelen 60C0ELZR Super LED 8-32 degree scene lights mounted onto the upper rear facing corners of the fire body. The scene lights will be controlled by a switch in the cab or at the rear of the fire body but automatically disengaged with the release of the parking brake.
- 6.19 With the exception of compartments with less than 0.5 cubic feet of storage, each compartment will be provided with LED compartment lighting. Unless otherwise specified, the lights will be ROM LED type compartment lights.
- 6.20 The pump compartment will be provided with LED lights for illumination as required by NFPA 1901.

7.00 PUMP, PLUMBING, FOAM AND TANK

- 7.01 The fire pump will be manufactured in the United States and will be manufactured by either Waterous or Hale. The preferred fire pump is manufactured by Hale.
- 7.02 The fire pump will be a single stage pump rated at no less than 1,500 GPM.
- 7.03 The fire pump will be provided with maintenance free self-adjusting mechanical seal(s).
- 7.04 The pump is to be provided with cathodic protection. The desired cathodic protection will be provided through replaceable anodes.
- 7.05 The pump shift will be air operated with the shift controls located in the driver's area within the cab.
- 7.06 The fire pump will be provided with an electrically operated fluid-less primer.
- 7.07 The fire pump will be provided with an Akron style 59 intake relief valve.
- 7.08 The fire pump will be provided with two 6-inch NST intakes, one on each side, of the apparatus.
- 7.09 The fire pump will be provided with one 2-1/2 inch NSPT gated female intake with plug on the driver's side pump panel.

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- 7.10 The fire pump will be provided with a 3-inch tank to pump. The intake from the pump will be provided with both a check valve and control valve to isolate the tank from the pump.
- 7.11 The pump will be provided with a "master drain" that will drain the discharge manifold and fire pump.
- 7.12 Unless otherwise specified, all discharge valves will be manufactured by Akron and will be electrically controlled. The 1-1/2" and larger discharges will be controlled by an Akron valve control with pressure and flow meter for the electric valves and manual valves will be monitored by Akron pressure and flow meter.
- 7.13 The discharge manifold will be constructed of stainless steel.
- 7.14 The fire pump will be provided with an automatic overheat system designed to alert the driver operator of an overheated pump and automatically providing the entrance of cool water by discharging the hot water to the atmosphere.
- 7.15 The fire pump will be provided with a one-half inch (1/2") circulating line to be provided with a 1/2" valve from the discharge side of the pump and terminate inside the tank or tank fill tower. The intent of this line is to circulate water through the pump to reduce the potential of overheating the pump.
- 7.16 Controlled at the pump panel, a 1" tank fill line with a 1" valve will be provided to fill the water tank through the pump. The line between the discharge valve and the tank will be high pressure hose with Victaulic, or equal, fittings.
- 7.17 Controlled at the pump panel, the front discharge will be plumbed with a 2-inch line and discharge valve. The line between the discharge valve and the termination point will be high pressure hose with Victaulic, or equal, fittings.
- 7.18 The front discharge will terminate above the extended front bumper in a location near the front of the bumper near the driver's side frame rail. The discharge will be finished with a chrome finished swivel that terminates with a 1-1/2 inch NST male.
- 7.19 The lowest position of the front discharge will be provided with an automatic drain through the use of an Elkhart model 702, or equal, ball drip valve.
- 7.20 Pre-connect 1 will also be positioned across the fire body ahead of the fire pump module and will be the most forward of the three hose lines. The discharge will be controlled at the pump panel with a 2-1/2 inch swivel, high pressure supply hose and discharge valve. The line between the discharge valve and the termination point will be high pressure hose with Victaulic, or equal, fittings.
- 7.21 Pre-connects 2 and 3 will be positioned across the fire body ahead of the fire pump module. Each will be separately controlled at the pump panel with a 2-inch line and discharge valve. The line will terminate in the bottom of the hose bed with a 1-1/2 inch swivel. The line between the discharge valve and the termination point will be high pressure hose with Victaulic, or equal, fittings.
- 7.22 A 2-1/2" gated discharge will be plumbed to the right, officer side, pump panel. The discharge will be provided with a 30 degree elbow with cap.
- 7.23 A 2-1/2" gated discharge will be plumbed to the left, officer side, pump panel. The discharge will be provided with a 30 degree elbow with cap.
- 7.24 A 4-inch discharge will be hard plumbed from the manifold to the right side pump panel. The discharge will terminate with a locking 5-inch Storz fitting with cap. The line will be provided with a slow-close discharge valve.
- 7.25 A 4-inch discharge will be provided for the aerial device. The discharge will include a 4-inch electrically operated slow close valve, controlled at the left pump panel, and plumbed with rigid piping, high pressure hose or a combination of each.
- 7.26 The 4-inch discharge serving the aerial device will be provided with Elkhart model 702, or equal, ball drip valve at each low point where water may be trapped.
- 7.27 The 4-inch pump discharge serving the aerial device will be provided with a Tee fitting to serve the aerial or serve as a large diameter hose discharge outlet that will terminate at the rear of the fire body. The termination point will be finished with a male 4-inch National Standard Thread fitting with chrome cap. This termination will be referenced as the aerial inlet/pump outlet.
- 7.28 The 4-inch pump discharge/aerial waterway will be provided with a Hale or Akron Brass 2-1/2 inch relief valve that will discharge excess water pressure to the atmosphere.
- 7.29 The 4-inch pump discharge/aerial waterway will be provided with a 1-1/2 inch drain valve located at the rear of the apparatus.
- 7.30 Unless otherwise specified, quarter turn drain valves will be provided for each discharge of 1-1/2 inch or larger.

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PUMP CONTROLS

- 7.31 The fire pump will be managed by an FRC INCONTROL model TGA401 pressure governor, engine monitor and master pressure display specifically designed for use with Cummins IS Series motors. This unit will display Master pump intake pressure; Master pump discharge pressure, RPM, pressure mode LED, RPM mode LED, Pump ready LED, Engine oil pressure, Engine coolant temperature, transmission temperature, Battery voltage, High-idle, Check Engine/Stop Engine LED, alarm silence, and menu for various programs.
- 7.32 The pump panel will be provided with the following:
- 7.32.01 Speed counter
 - 7.32.02 Test gauge outlets for both suction and discharge pump pressures
 - 7.32.03 Radiator fill
 - 7.32.04 Pump hour meter
 - 7.32.05 Button to operate the chassis mounted air horns.
 - 7.32.06 Pump hour meter
 - 7.32.07 Fuel level gauge
 - 7.32.08 Ammeter gauge
 - 7.32.09 An air horn switch labeled "EVACUATION ALERT."
- 7.33 The water tank will be provided with an FRC model WLA260 water tank level indicator, or equal.

FOAM SYSTEM

- 7.34 A Foam Pro model 2002 foam concentrate injection system will be provided. It is the intent of this system to provide foam to the front jump line and all three crosslays.
- 7.35 The foam system will be provided with a manually operated two-tank selector valve for the selection of class A or class B foam concentrate. Operation of the valve will automatically select the prescribed percentage of foam to be injected.
- 7.36 The foam system will be provided with an in-line strainer.
- 7.37 The foam system will be provided with a paddlewheel style flow meter and a digital display and control module.
- 7.38 A placard describing the foam system will be provided on the pump panel.
- 7.39 All valves and controls operating the foam system will be located on the left or driver's side pump panel.
- 7.40 The apparatus will be provided with a Class 1 EZ –Fill foam reservoir refill system for support of both the class A and class B foam. The system may be provided on the right or officer's pump panel if there is insufficient room on the left pump panel or back side of the steps leading to the platform.

WATER TANK

- 7.41 The water tank will be constructed of ½" polypropylene that has been UV stabilized. The tank will be provided with isolated fill towers for water, class A foam and class B foam. The fill tower for the water will include an overflow/vent and a removable screen to prevent unwanted materials from entering the tank.
- 7.42 The tank will be as short in height as possible. This will reduce the center of gravity for the vehicle.
- 7.43 The tank will be located inside the fire body. It will be mounted in a manner to isolate the tank from road shock and vibration. Tank cushions are to be permanently mounted to the body frame. The tank is to be completely removable.
- 7.44 The tank will contain 300 gallons of water, 10 gallons of class "A" foam and 20 gallons of class "B" foam. Each fill tower will be clearly identified as to its contents.
- 7.45 Each of the two foam tanks will be provided with a manually operated stainless steel ball valve at the opening of each tank.
- 7.46 From the discharge side of the foam tank valve, a stainless steel Tee will be provided with one side providing the foam concentrate to the foam injection system and the other side provided with a stainless steel ball valve and hose or plumbing to serve as a drain with the discharge terminated below the chassis, plumbing and hose of the apparatus.

8.00 GENERATOR, A/C POWER AND LIGHTING

- 8.01 The generator and related wiring, circuits and appliances will be in compliance with NFPA 1901 and NFPA 70, National Electrical Code.

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- 8.02 The generator will be a Cummins Onan commercial generator set, hydraulic series HG10000 producing 10kW of 60 hertz 120/240 single phase power. The generator will be powered by a PTO operated hydraulic pump that is attached to the chassis transmission. The generator will be enclosed so as to allow it to be installed in a location where it may be exposed to the environment. Controls for the engagement of the hot shift PTO to operate the generator will be located within the driver's area of the cab.
- 8.03 The generator enclosure will be designed to allow access for service from a single side. The generator will be located on top of compartment L-3.
- 8.04 The hydraulic generator will be provided with a drain that terminates beneath the fire body to safely drain the hydraulic fluid without the risk of contamination to the fire body or equipment.
- 8.05 Cummins Onan will provide a digital display that will monitor and control the generator. The display will be located inside compartment L-3.
- 8.06 The generator will be wired to a distribution panel that will distribute the generated power into 12 circuits. The distribution panel will be weather resistant and located inside compartment L-3 which will be in close proximity as the Cummins Onan digital display.
- 8.07 The following circuits will be provided:
- 8.07.01 Left side push up light
 - 8.07.02 Right side push up light
 - 8.07.03 Left side cord reel
 - 8.07.04 Right side cord reel
 - 8.07.05 5L20 outlet, two, Left side gravel shield
 - 8.07.06 5L20 outlet, two, Right side gravel shield
 - 8.07.07 5L20 outlet, two, low Left rear of body
 - 8.07.08 5L20 outlet, two, low Right rear of body
 - 8.07.09 Aerial Ladder
 - 8.07.10 Spare
 - 8.07.11 Spare
 - 8.07.12 Spare
- 8.08 There will be two cord reels, one each side, with an electric rewind feature. Located inside an aluminum enclosure forward of the cross lays, the cords will project through the aluminum with a set of rollers at the opening to help direct the cords into their respective spools. The cord reels will be manufactured by Hannay.
- 8.09 Each cord reel will have the ability to store 200-ft of 10-3 cord, yellow in color, and finished with a 5L-20 twist lock connector.
- 8.10 Each cord will be provided with a large stopper ball to keep the cord from being drawn completely into the cord reel.
- 8.11 A push button rewind switch for the cord reel will be in close proximity to the cord reel.
- 8.12 Each cord reel will be provided with a foot operated rewind switch.
- 8.13 Two FRC 28" push up lights with Optimum 750W/110V will be provided, one each side, in the forward body immediately ahead of the cord reels and cross lays.
- 8.14 A FRC 750 watt Optimum light on platform. The light will be plugged into a 115 VAC outlet with twist lock outlet for other appliances while the light is not being used.
- 8.15 The generator will be provided with an hour meter to demonstrate the amount of time that it has been operated.

9.00 AERIAL DEVICE

GENERAL

- 9.01 The aerial device will be a solid wall telescoping box boom with articulating jib boom aerial platform.
- 9.02 The nested aerial device will be no greater than 12'-0" with the apparatus parked on a solid level surface.

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- 9.03 The aerial will have a maximum vertical height of 114-feet, a below grade reach of no less than 15-feet, and a maximum horizontal reach of no less than 84-feet.
- 9.04 The aerial will operate within all positions with a consistent load capacity without water flowing and a slightly reduced load capacity while flowing water.
- 9.05 The aerial will include an articulating jib boom positioned between the end of the telescoping boom and the platform. The jib boom will have the ability to swing 170°, or more, in relation to the main boom so as to position the platform over obstructions such as parapets or below the grade of the stabilized apparatus.
- 9.06 The aerial platform will have the ability to swivel 45° in both directions from the center line of the jib boom of the aerial.
- 9.07 The platform will have a rated capacity for personnel and equipment of no less than 1,000 pounds in all platform positions without water flowing and no less than 750 pounds in the same positions while flowing water.
- 9.08 The platform will also have a lifting eye rated at 1,000 pounds.
- 9.09 As built electric wiring diagrams for the aerial device and its related electronic components will be provided.
- 9.10 As built hydraulic hose and component diagrams for the aerial device will be provided.

HYDRAULICS

- 9.11 The aerial will use a common hydraulic system for both the stabilizers and the aerial device. The system will be powered by the transmission mounted hot-shift PTO. The aerial device will allow the PTO to be engaged from the various control panels including the stability control compartment.
- 9.12 The hydraulic system will be designed to allow multiple function operation of the aerial without noticeable loss of speed to any one function.
- 9.13 The hydraulic system will be designed with sufficient volume and operational considerations to ensure continuous operation without overheating or becoming inoperable.
- 9.14 The hydraulic system will be monitored for temperature. An audible and visual warning will be provided to both control stations should the system become overheated.
- 9.15 The hydraulic reservoir for the aerial device will be provided with an electronic monitoring system that provides a display in the back wall of the platform access step area.
- 9.16 The hydraulic fluid will be filtered to prevent valve or cylinder damage from contaminants. The filters, fill opening and drain will be positioned where it may be periodically inspected and serviced.
- 9.17 Valves will be provided on both sides of hydraulic filters and major components to allow maintenance without a significant loss of hydraulic fluid.
- 9.18 The hydraulic system will be provided with a relief valve to protect the system and components from excessive pressure.
- 9.19 Both a manual and electrically operated emergency hydraulic pumps will be provided. The hydraulic fluid pick up tube for the emergency pumps will extend further down into the oil tank to provide access to reserve hydraulic fluid in the case of hydraulic line failure.
- 9.20 Check or holding valves will be provided directly onto all hydraulic cylinders used to stabilize or operate the aerial device to prevent unwanted drift or movement of the cylinders.
- 9.21 All hydraulic cylinders will be chrome plated.
- 9.22 The aerial device will be provided with an hour meter to identify the amount of time it has been operated.
- 9.23 The hydraulic system will use a series of interlocks to prevent unwanted operation of the aerial device. With the aerial still in its stowed position, the hydraulic system will be limited to only the stabilizers. Only after the vehicle has been adequately positioned, leveled and stabilized will an interlock allow the hydraulics to be transferred to the aerial device. Once transferred, the hydraulic system can not operate the stabilizers until the aerial has been safely secured back into its stowed position.
- 9.24 The hydraulic controls will be configured so that the turntable control panel will override the controls made by at the platform control station.

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- 9.25 The hydraulic system will be designed with electronic controls to reduce the hydraulic flow and cylinder movement as it approached both maximum and minimum cylinder position. The system will also produce a visual alert for the operator.
- 9.26 The hydraulic system will be provided with electronic ramping to minimize the sudden start and stop hydraulic actions that result in jerky type movement. This is particularly important to the rotational movement of the aerial.
- 9.27 The aerial device will be provided with collision avoidance controls to minimize the risk of the aerial striking any component of the apparatus during aerial operations.
- 9.28 The hydraulic system will be provided with sufficient interlocks to prevent simultaneous hydraulic power to both the stabilizer and aerial system.
- 9.29 Any hydraulic over-ride switches or controls will be physically located in a secure area to prevent unwanted access and require the use of a second person to operate the designed system.

STABILIZER SYSTEM

- 9.30 The aerial device will include multiple interlocks to reduce or eliminate the opportunity for unsafe conditions or operations. This will include, but will not be limited to, the inability to operate the aerial without first securing the apparatus and stabilization system in a secure and level position. Once the stabilization system has been successfully managed, power may be given to the aerial device with the operation of a switch located in the stabilization control compartment.
- 9.31 Operation of the hydraulic system will result in the illumination of the ground lights at the stabilizers as well as the flashing lights. Operation of the stabilizer controls will result in the desired hydraulic action as well as operate an audible alarm.
- 9.32 The stabilization system will involve the use of four out and down stabilizers.
- 9.33 On a flat level surface with all four stabilizers fully extended and positioned, the aerial device will have the ability to rotate 360° with the aerial device fully extended at zero degrees elevation with 1,000 pounds in the platform without lifting any of the stabilizers up from the ground.
- 9.34 The aerial will be capable of being used with one side of the stabilizers in a position of less than fully extended away from the body. Referred to as short jacked, the aerial will recognize this situation and prevent the operator from rotating the aerial to the short jacked side.
- 9.35 Four aluminum stabilizer ground pads will be provided with cut out hand openings. The manually positioned ground pads will be stored in pairs on each side of the apparatus beneath the fire body positioned directly behind the rear wheels. The storage rack and stabilizers will be positioned where there is minimal risk of contact with the ground or other obstructions. Each of the four stabilizer pads will meet the criteria established by the aerial manufacturer.
- 9.36 Each outboard face of the four stabilizers will be cosmetically trimmed with aluminum tread plate to blend the stabilizers into the fire body while in the stowed position. In addition to the improved appearance, the trim will be designed to protect the cylinders from physical contact from objects that may result in damage to the cylinder.
- 9.37 The aerial will be provided with both manual controls for operation of the stabilizer system as well as an automatic leveling system. The automatic stabilizer system will have the ability to level the apparatus and provide inter-lock to engage the aerial device in 40 seconds or less. The controls for stabilizing the apparatus and device will be located at the rear of the apparatus in a designated compartment.
- 9.38 Four, two on each rear corner, bubble type leveling indicators will be provided to assist in positioning the apparatus in a flat and level position fore to aft as well as side to side of the apparatus. The leveling indicators will demonstrate the vehicle's relationship to level in both the fore to aft and left to right planes.
- 9.39 The stabilizer system will be designed to allow manually operated hydraulics for each stabilizer as well as an automatic leveling system.
- 9.40 Each stabilizer will be provided with ground illuminating lights and flashing warning lights that will automatically operated when the hydraulic power for the aerial device has been engaged. Both the illuminating and flashing warning lights will be LED type.
- 9.41 Both the illuminating and flashing warning lights will be manufactured by Trucklite and will automatically operate with the engagement of the Aerial PTO switch. And remain operating until the aerial PTO switch is disengaged.
- 9.42 An audible alarm will sound while the stabilizers are in motion.
- 9.43 The apparatus will use a series of lights and a display to demonstrate the vehicle's relationship to level. Once established, one or more green lights or similar indicators will illuminate to confirm vehicle stabilization.

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- 9.44 With the vehicle suitably positioned and stabilized with acceptance of the various interlocks, hydraulic and electric power may be switched to the aerial device controls and functions.
- 9.45 Each stabilizer will be provided with reflective red and lime-yellow stripes on both the vertical and horizontal surfaces to alert pedestrian and automotive traffic of the deployed stabilizers.

TORQUE BOX, ROTATIONAL BEARING

- 9.46 The aerial device will be attached to a rotational bearing that is secured by a torque box that is in return attached to the apparatus chassis.
- 9.47 The torque box will be of sufficient design and construction to safely support the aerial.
- 9.48 The torque box will not be welded to the chassis.
- 9.49 While in the stowed position, the aerial will be supported at the rotational bearing as well as a supportive rest located directly behind the chassis cab. The supportive rest will be designed and constructed to safely support the "nested" aerial device while in transit. The supportive rest will not be welded to the chassis frame.
- 9.50 The turntable rotational bearing will be accessible for routine inspection, lubrication and periodic maintenance of the torque bolts.
- 9.51 The rotational bearing will allow the aerial to continuously rotate 360° through the use of two (2) hydraulic motors.

AERIAL

- 9.52 The main boom of the aerial device will consist of a base and two telescoping sections. An articulating jib boom will be provided at the end of the inner-most telescoping main boom section. A caged platform will be attached to the end of the jib boom.
- 9.53 The main boom will be provided with two large externally mounted cylinders to provide elevation of the aerial device.
- 9.54 Extension of the telescoping tubes will be accomplished through the combined use of one or more hydraulic cylinders and heavy-duty chain or cables. The chains or cables will be capable of being periodically inspected and maintained.
- 9.55 The jib boom will be attached to the main boom and operated by a single externally mounted hydraulic cylinder to move the platform away from, or, towards the main boom.
- 9.56 The platform will be attached to the jib boom and will be provided with automatic leveling cylinders to keep it in the same plane as the stabilized torque box and chassis.
- 9.57 The platform will also have the ability to rotate left or right to the axial plane of the jib boom. This feature is beneficial in conducting operations at multiple windows or positions on a building without moving the apparatus.
- 9.58 An escape ladder will be provided from the platform to the turntable. The escape ladder will include features to allow continuous operation at the hinge point between the main boom and jib boom as well as jib boom and platform.
- 9.59 While nested, the jib boom will come to rest between the aerial support and the main boom of the aerial. Areas where the jib boom or main boom come into contact while in the stowed position will be covered by polished stainless steel to prevent unwanted scuff or damage to any portion of the booms.
- 9.60 The aerial support, nest or cradle, will include an angled opening to assist the operator in placing the device into the appropriately stowed position. The support, nest or cradle will include appropriate rubber padding to minimize the risk of damage.
- 9.61 The aerial support, nest or cradle will be designed and constructed of heavy duty materials and secured directly to the vehicle chassis frame.

WATER DELIVERY SYSTEM

- 9.62 The aerial will be plumbed with a four-inch, or larger, stainless steel waterway for delivery of water to protect the platform through a curtain of water or to provide suppression capabilities from a hose line or from the monitor nozzle. High pressure hydraulic hose will be used to join the waterways at the joint between the main and jib booms as well as the jib boom and platform.
- 9.63 Water for the aerial device may be provided from the vehicle's fire pump or from an external water source supplied through the rear aerial inlet/pump outlet.

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- 9.64 The waterway will extend up to the platform where it will be provided with a 2-1/5" Akron gate valve finished with a 2-1/2" NST male fitting with cap with retaining cable.
- 9.65 The waterway will also be plumbed to an Akron electric 1,000 GPM electrically operated monitor. The monitor will operate on 24-volts DC and will be provided with a butterfly valve to open and close the water flow discharged from the monitor. The monitor will have the ability to sweep 45° left and right from its center position. It will also have the ability to change elevation and change stream pattern from straight stream to a fog pattern.
- 9.66 A protective sleeve constructed of UV resistant material will be provided to protect the high pressure water hose where exposed to the environment between the boom sections.

PLATFORM

- 9.67 The aerial platform will provide no less than 20 square feet of space within the walls of the platform plus an extended rescue deck positioned at the front of the aerial.
- 9.68 The front face and sides of the platform will be provided with aluminum sheets to serve as a heat shield. The walls will remain unpainted but given a swirl type finish.
- 9.69 The platform will be provided with an aluminum sheets on the underside of the platform to serve as a heat shield.
- 9.70 The underside of the platform will be provided with one or more curtain nozzles to cool and protect the platform from unwanted heat. The nozzles will be operated by a valve located in the platform.
- 9.71 The primary access points into the platform will be from the two side mounted inward swinging doors that are self-closing and latching.
- 9.72 The underside of the platform will be provided with rubber bumpers to protect the platform from contact with the ground or other similar surface.
- 9.73 The right side of the platform, offset to the rear will be provided with a hose box to contain 50-ft of 1-3/4" double jacket hose.
- 9.74 The platform will be provided with mounting hardware to allow attachment of a stokes basket during rescue operations.
- 9.75 The platform will be provided with a Stokes basket receiver. The aerial will be provided with a Stokes basket and stokes basket mounting bracket for the standard storage onto the lower portion of the main boom along the left side of the boom.
- 9.76 The platform will be provided with no less than two attachment points for safety harness and lanyards.
- 9.77 The platform will be provided with no less than two breathing air outlets. The outlets will produce breathing air at a pressure of approximately 100 psi and will be finished with stainless steel fittings that are compatible with Survivair Foster type fittings.
- 9.78 The aerial platform will remain fully operational in winds up to 45 mile per hour.
- 9.79 An FRC Optimum 750 Watt light will be mounted onto the right side of the platform, offset to the front. The light will use a twist lock plug that will be connected to a twist lock receptacle to allow the light to be unplugged and a different piece of equipment used in its place.

CONTROLS

- 9.80 Controls for the aerial device will be located at both the turntable and platform. Controls at the turntable will have the ability to override those in the platform. Otherwise, each control station will have the same operational controls and instruments.
- 9.81 Both control stations will be protected by a hinged cover.
- 9.82 The aerial controls will include a high idle switch, ignition switch, PTO switch, hydraulic pressure gauge, horn button, electric controls for the monitor nozzle, wind speed indicator, platform load sensing system with audible alarm and gauge to prevent overloading of the platform, background lights, boom lights, and communications equipment. It will also contain the operating controls for main boom elevation, main boom extension, main boom rotation, jib boom operation, and platform rotation.
- 9.83 The aerial will be provided with a wind speed indicator. The measured wind speed will be displayed at both the turntable and platform controls.
- 9.84 The aerial will be provided with an enhanced alignment feature to assist the operation in preparing the boom for quick deployment and stowage.

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- 9.85 The aerial device will include an LCD screen to identify the actual working height, actual outreach and main boom angle of the aerial device. The screen will also display the water flow, water pressure and breathing air level.
- 9.86 The electrically operated hydraulic controls will be provided with a ramping feature to minimize the sudden start and stop action that results in unwanted jerky movements.

AERIAL LIGHTS AND INTERCOMMUNICATION

- 9.87 The aerial will be provided with 24-volt DC lights manufactured by Collins or Unity positioned at the left side of the platform, on the jib boom and at the base of the main boom. The lights will be provided with LED type lamps.
- 9.88 An Atkinson Dynamics intercom system will be provided at both the platform and turntable controls to enable voice communications between the two positions during aerial operations.

10.00 BREATHING AIR SYSTEM

- 10.01 A breathing air system will be provided for the firefighter assigned to the turntable and two for the platform. The system will consist of two DOT cylinders each containing approximately 509 cubic feet of grade D quality breathing air at approximately 4,500 psi. The cylinders will be secured onto the side of the aerial device near the turntable.
- 10.02 The air cylinders will be interconnected through a pressure regulator located near the air cylinders. Each cylinder will be provided with individual cylinder valves. The pressure regulator will have the ability to reduce the pressure from approximately 4,500 psi down to 100 psi. The system will include a filter and a moisture separator to provide assurance that contaminants are not introduced into the system.
- 10.03 The breathing air cylinders will be provided with valve protection that is attached to the cylinder.
- 10.04 The breathing air will be routed to the platform using Teflon hose specifically designed for use in breathing air systems.
- 10.05 The breathing air will be plumbed to one outlet at the turntable and two outlets within the platform. Each outlet will consist of a Fosters quick disconnect fitting (Survivair 961148 or equal) with a removable plug to protect it from environmental contaminants.
- 10.06 The breathing air outlet at the turntable will be in a convenient location for the person assigned to operate the aerial device at that location. The breathing air outlets for the platform will be located at the rear of the platform.
- 10.07 The system will be designed in a manner to accommodate the filling of the breathing air system and related cylinders. This will include a 50-ft high pressure hose rated at no less than 10,000 psi and constructed specifically for use with breathing air systems.

11.00 AUDIBLE AND VISUAL WARNING DEVICES

- 11.01 All warning lights will be connected to a master warning light switch. Engagement of the switch will signal the multi-plexing system to sequence the operation of the warning lights so as to minimize any electrical spikes to the warning systems or electrical system.

LOWER LEVEL WARNING LIGHTS

- 11.02 Two Whelen 600 series Super LED, red/blue with clear lens will be mounted into the inboard position of the light bezel used for the front turn signals.
- 11.03 One Whelen 4500 series light bar consisting of 45B38 Build A Bar configuration with 45CLR corner Linear LED red/red duplex, GTT 795 Opticom emitter and 45795H pre-wire for GTT 795 Opticom emitter will be mounted onto the front of the cab directly beneath the windshield. A bracket may be required to attach the light bar in a level position.
- 11.04 The Opticom emitter is to be provided with an individual switch and connected with the master warning switch. The emitter is also automatically to disengage upon setting of the parking brake.
- 11.05 Two, one each side, Whelen 600 series Super LED, red with clear lens, will be mounted onto the side of the gravel shield.
- 11.06 Two, one each side, Whelen 600 series Super LED, red with clear lens, will be mounted onto the side of the of the cab slightly behind the front wheel but ahead of the rear door.

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- 11.07 Two, one each side, Whelen 600 series Super LED, red with clear lens, will be mounted onto the forward corner of the rear wheels.
- 11.08 Two, one each side, Whelen 600 series Super LED, red with clear lens, will be mounted onto the body near the rear stabilizers. This will be specifically located below compartment L-6 on the left side and R-8 on the Right side.
- 11.09 Two Whelen 600 series Super LED, red/blue with clear lens will be mounted onto the rear face of the fire body.

UPPER WARNING LIGHTS

- 11.10 Two Whelen FNMINI LED MK9 light bars, red with clear lens, will be located on the front of the roof and positioned in the most outboard position possible. The light bars will be provided with Whelen Dual LR11 Alley lights that will be switched separately from the warning lights. The alley lights will be switched from the cab and will be wired with the respective scene light mounted on the upper portion of the cab between the front door and the fixed side window.
- 11.11 Two Whelen FRDM SIDE MK9 light bars, red with clear lens, will be provided at the rear of the cab facing outward and positioned at the center of the rear doors.
- 11.12 Two Whelen MCFLED2R or two Whelen B6LED warning lights, one on each side, will be provided at the upper rear corners of the apparatus. The lights will be red with clear lens.

OTHER VISUAL

- 11.13 One Whelen TAL65 LED traffic warning device (directional arrow) will be mounted on the rear face of the fire body directly above the rear ground ladder storage compartment door. The controls for the traffic warning device will be located in the cab within reach of the driver and will produce a visual signal that is being produced by the light at the rear of the truck. A protective cover will be provided above the light to reduce the risk of the fixture from being damaged.
- 11.14 An alternating headlight flasher will be provided. The headlight flasher will be capable of being individually turned off through the use of the multiplexing system and will automatically turn off. The flasher will automatically disengage when the high beams are being used as well as upon engagement of the parking brake.
- 11.15 A Unitrol Touchmaster TM1 200-watt electronic siren to be provided and made accessible to both the driver and front passenger.
- 11.16 Foot operated switches will be provided for the driver and front passenger floor to operate the electronic siren. All foot switches to be identified with durable labels.
- 11.17 A siren is to be provided with a noise-canceling microphone for use of the Public Address (PA) system.
- 11.18 The siren is to be provided with a siren kill switch that stops the siren sound when the apparatus parking brake is engaged. The switch is also to stop the Opticom signal.
- 11.19 Two, one each side, Federal Signal model Dynamax ES100-EF 100-watt speakers are to be mounted forward facing through the front bumper. The speakers will be positioned, one each side outboard the frame extensions.
- 11.20 Two, one each side, Grover Studdertone 24-inch chrome air horns will be recessed into the front bumper. The air horns are to be forward facing and will not have any obstruction to the front open end of the horn.
- 11.21 The air horns to be operated by a foot switch located at the passenger's floor and the center horn button of the steering wheel. The floor switch is to be identified.
- 11.22 A switch is to be located on the dash for the selection of the twin electric horns or the air horns.
- 11.23 A Federal Signal model Q2B electro-mechanical siren will be provided. The siren will be mounted on top of the bumper on the right or passenger side. The Q2B siren will be operated by foot switches located at both the driver's and front passenger's floor. A brake will be provided within reach of the front passenger. The switches and brake will be identified and the siren will only operate when the master warning light switch is placed in the on position.
- 11.24 The portion of the bumper that will support the model Q2B siren will be reinforced to support the weight and torque produced by the siren. This will include structural support beneath the finished deck of the front bumper and additional layers of plate aluminum to distribute the loads.

12.00 COMMUNICATIONS, DATA RECORDER AND ELECTRONICS

- 12.01 All radio, communication, data recording and similar electrical systems will be installed by the

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manufacturer of the apparatus and included in the electrical performance test.

RADIO

- 12.02 Questions concerning the radio need to be directed to Steve Kumrow at Motorola, (918) 251-4007.
- 12.03 The vehicle two-way radio will be a Motorola XTL 5000 05 mobile radio 10-35 watt, 764-870MHZ, with Astro digital CAI operation, smartzone operation, 05 control head and software, remote mount, antenna, microphone and speaker required. The radio will include a (2) two year repair service advantage.
- 12.04 A Motorola W355, 8-button status message option, for XTL5000 05 head will be provided. It will be positioned within easy reach of the front right passenger and actually positioned during the final inspection.
- 12.05 The radio antenna will be mounted onto the roof with the coaxial termination near the center of the cab for connection to the radio.
- 12.06 The manufacturer of the apparatus will install the radio and antenna. The City of Tulsa will conduct the needed programming for actual operation within the Tulsa Fire Department radio fleet.
- 12.07 The radio will be installed where it will be accessible by both the driver and the front passenger/officer.

CAMERA

- 12.08 The apparatus will be provided with an automated drive recorder type camera that will monitor and record both the audible and the visual images inside the cab as well as directly outside the front windshield. The camera will be provided by "The Eye" (www.joutec.com). The camera will be positioned near the upper center portion of the windshield where it will have a clear view of the front two passengers without obstructing vision for either.

MULTIPLEX ELECTRICAL SYSTEM MANAGEMENT

- 12.09 Both the chassis and fire body will be fully multi-plexed and integrated into one another. Screens and integrated into one another. Screens and selection buttons for the basic system management will be within reach and view the driver.
- 12.10 The desired multiplex system will be manufactured by Weldon.
- 12.11 Using the screen and control switches for the multiplexing system, the driver will have the ability to control various systems such as HVAC controls, warning lights and other similar vehicular functions. This may include images produced by the right side camera and rear facing camera.
- 12.12 A Weldon Weldon 6500-0000-00 V-MUX rear facing camera will be provided. The camera will provide color video out and will include mounting hardware. The rear facing camera will be recess mounted into the body below the hose bed and above the rear compartment door. The camera will produce a visual image onto a screen within view of the driver when the transmission is placed into reverse. It is acceptable to use the multiplex screen dedicated to the driver for this purpose. In addition to the visual image, the rear-facing camera will also provide audio of the rear area for the driver.
- 12.13 A right side camera will also be provided in or mounted onto the right mirror or right forward portion of the cab. The camera will provide a visual image onto a screen within view of the driver when the right turn signal is operated. It is acceptable to use the multiplex screen dedicated to the driver for this purpose. The intent of this camera is to reduce the risk associated with blind spots located on the right side of the apparatus.
- 12.14 A Weldon V-MUX™ Vehicle Data Recorder (VDR) will be provided to retain no less than the following types of information:
- 12.14.01 Engine RPM
 - 12.14.02 Throttle percent
 - 12.14.03 Vehicle speed
 - 12.14.04 ABS events and transmission range information
 - 12.14.05 Seatbelt status
 - 12.14.06 Master warning
 - 12.14.07 Parking brake
 - 12.14.08 Seatbelt warning

SEATBELT MONITOR SYSTEM

- 12.15 A Weldon V-MUX™ Occupant Restraint Indicator will be provided.
- 12.16 The vehicle will be provided with a seatbelt warning system that will provide both an audible and visual alarm when there is a weight placed upon a seat but the seatbelt has not been fastened. The system will monitor the seat and seatbelt usage and display it onto a standard switch display in view of the driver to demonstrate a confirmed use of

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seatbelts or identify which seat is in use without a deployed seatbelt. The system will also display a generic layout of the cab representing each seat, its use and seatbelt usage. The generic layout display will be positioned in view of the officer. Data from the system will be recorded on the vehicle data recorder.

KNOX BOX KEY VAULT

12.17 A Knox Box KeySecure 3 USB with audit trail model 2642 electronic key retention device will be installed within reach of the officer.

COMMUNICATION HEAD SETS

12.18 An AVCOMM wireless communication system will be provided.

12.18.01 General System Operation

- 12.18.01.1 The system will provide wireless intercom between four of the five seated positions inside the cab. The fifth seated position will have a headset that is hard wired into the system.
- 12.18.01.2 All wiring and connections used with the system will be shielded to protect against RFT and will have gold tipped connections.
- 12.18.01.3 The system will have the ability to record all intercom and radio transmissions. The actual components to create the recording will not be provided with this installation.
- 12.18.01.4 The system will have the ability to connect to cell phones and VOiP. However, the actual components to enable this feature may not be provided with this installation.
- 12.18.01.5 The system will interface with the apparatus Motorola two-way radio.
- 12.18.01.6 Each of the wireless headsets will be designed and provided with the necessary hardware to interface with Motorola 5000 XTS portable radios to allow both reception and transmission of radio signals through the headsets.
- 12.18.01.7 The wireless feature will have the ability to communicate VOX-intercom within 1,000-ft of the apparatus. Each of the headsets will be provided with externally cab mounted antennas to enhance communications outside the apparatus cab.
- 12.18.01.8 The system will include a design to eliminate unwanted noise production through the microphones and system.
- 12.18.01.9 The process of pairing headsets to the system will be easily accomplished in less than five minutes per headset.
- 12.18.01.10 The system will auto-reconnect when the headset has been moved outside the range of the system and then returned within range of the communications system.
- 12.18.01.11 The system will be manufactured in the United States and include a two year warranty on the system and headsets.

12.18.02 Headsets

- 12.18.02.1 The headsets will be water resistant with the specific design for use in rain or wet locations.
- 12.18.02.2 The headsets will be of the behind-the-head design or style with a stainless steel headband, latex-free, gel ear-seals and a noise reduction rating of no less than 24 NRR.
- 12.18.02.3 The headsets will be provided with fully enclosed and flexible boom microphones.
- 12.18.02.4 The headsets will be operated by a Lithium-Ion battery that will be capable of being charged in 3-hours with the ability to continuously operate the headset for a period of 24-hours on a full charge.
- 12.18.02.5 The headset will provide a tone alert for low battery and will display the battery state.
- 12.18.02.6 The headset will automatically shut off with inactivity
- 12.18.02.7 Dual color LEDs will be used to identify the battery level and connection with the inter-com system.
- 12.18.02.8 A charger connection will be provided at each headset storage hanger within the cab to allow the headset to be charged between each use.
- 12.18.02.9 Storage hangers for the headsets will be installed inside the cab. The specific location of the hangers will be determined at the time of the final inspection.

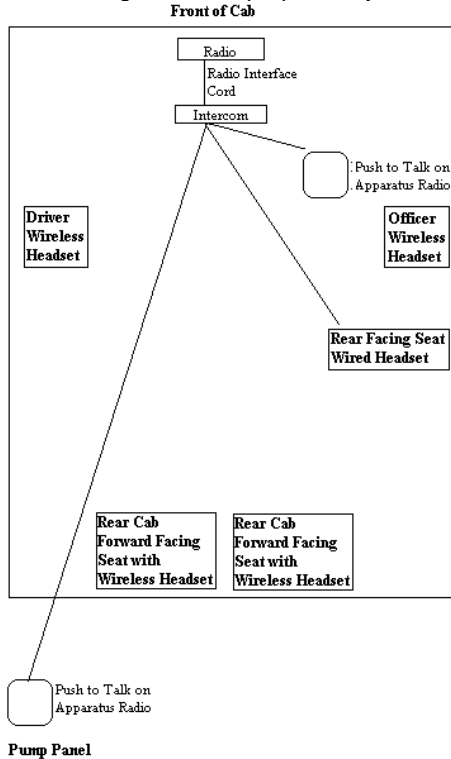
12.18.03 Specific Apparatus Needs

- 12.18.03.1 The headset used by the driver and the front right passenger will have the ability to receive and transmit the apparatus radio, interfaced portable radio and VOX-intercom.
- 12.18.03.2 A manually operated apparatus radio transmission button will be located onto the ceiling slightly ahead and to the left of the front right passenger. Operation of this button will transmit the voice of the front right passenger.
- 12.18.03.3 A manually operated apparatus radio transmission button hard wired jack box will be located onto the left (driver's side) pump panel. This position will use the headset that is hard wired inside the cab for the fifth passenger seat.
- 12.18.03.4 Two extra headsets, one similar to the wireless headsets used by the driver and front passenger, and one similar to that located at the rear of the cab, will be provided.

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12.18.04 Diagram of the proposed system.



13.00 PAINT AND FINISH

- 13.01 All exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate will be thoroughly cleaned and prepared for painting.
- 13.02 All removable items such as brackets, compartment doors, door hinges, trim, etc. will be removed and painted separately to insure finish paint behind all mounted items.
- 13.03 Body assemblies that can not be finished painted after assembly are to be finish painted before assembly.
- 13.04 An isolation tape or gasket will be used to prevent damage to finished surfaces before re-assembly and reinstallation of lights, handrails, door hardware and any miscellaneous items.
- 13.05 The cab, manufactured body and affiliated components are to be painted with no less than 5 finish coats of Sikkens red paint PPGFBCH70436. The color will be confirmed before the actual application.
- 13.06 The outer boom sections of the aerial device will be painted white. The remaining balance of the device, including the platform, may remain a natural aluminum color.
- 13.07 The interior surfaces of the compartments will be painted with a gray color truck bed material or Zolatone material.
- 13.08 The interior of the cab will be painted with a gray Zolatone material.
- 13.09 All hydraulic hoses, air hoses and wires will be masked before painting.
- 13.10 The Air conditioning condenser will be painted the same job color as the cab.

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- 13.11 The apparatus manufacturer will apply a gold-white-gold stripe onto the cab and body. The reflective material used in this application will be 3M Scotchlite 680CR. The 6" white band will be centered with the headlights with a 1" space above and below the white and then provided with a 1" wide band of gold.
- 13.12 The reflective stripes will be centered with the headlights and run laterally to each side across the front cab doors and then create a "Z" type pattern across the rear doors and extend across all of the painted compartment doors on both sides and terminate at the rear edge of the fire body.
- 13.13 The rear face of the apparatus will be provided with a reflective chevron of red and lime-yellow. The chevron will be designed and installed in compliance with the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). The reflective stripes will be six-inches in width and will be positioned on the rear face of the apparatus at an angle of 45-degrees sloping to the lowest and outermost corner of the apparatus.
- 13.14 The front bumper will be provided with a reflective chevron of red and lime-yellow.
- 13.15 The vertical and horizontal portions of the aerial ladder stabilizers and support structure will be provided with alternating reflective red and lime-yellow stripes constructed of the same material as described in paragraph 13.16.
- 13.16 The reflective material used to create the front and rear chevrons will be manufactured by 3M. The lime-yellow material will be used as the background and will consist of 3M diamond grade DG3 Fluorescent lime-green sheet 4083. The red material used to create the diagonal stripes will be 3M Scotchlite Electronic Cuttable Film – 1172-Red.
- 13.17 The bar stock type rub rail will be provided with 1-inch wide 3M diamond grade reflective material, white in color.
- 13.18 The Horizontal portions of the aerial device will be provided with 2-inch wide 3M Scotchlite 680CR.
- 13.19 The lower portion of the platform will be provided with 2" wide red/white 3M reflective conspicuity material.
- 13.20 The inside face of the vertically hinged compartments will be provided with no less than 4" wide reflective chevron style image with reflective red and lime yellow material across the bottom of the door.
- 13.21 The flange surface of shelves and trays that face the exterior of the compartment will be provided with lime yellow reflective material.
- 13.22 Gold leaf striping and arrow points with an adjacently located white pen stripe will be provided near the bottom of the cab, across the front door, around the front wheels, and around the rear door, and bottom of the cab aft the rear door.
- 13.23 A gold leaf stripe, with an adjacently located white pen stripe, will be provided below the windshield on each front corner of the cab. The stripe will resemble figure 11.20. Specific details will be determined at the pre-construction meeting.
An example of striping on the front left corner of the cab.
- 13.24 All gold leaf will be encapsulated between two layers of clear vinyl.
- 13.25 Additional lettering, numbering and graphics will not be needed. The Tulsa Fire Department will create and apply the vehicle designations.

14.00 LOOSE EQUIPMENT

- 14.01 The following items will be provided for each apparatus.
- 14.02 Four Streamlight Fire Vulcan LED rechargeable lantern with vehicle mount system w/ quick release shoulder strap.
- 14.03 Two Akron style 25 spanner wrenches
- 14.04 Three Akron style 2443 triple wrench set containing the mounting bracket, two style 10 spanners and one style 15 hydrant wrench
- 14.05 One Elkhart model BG-104 water thief with pressure gauge

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- 14.06 Two Elkhart 9723 Elk-O-Lite 3-way gated Siamese with three 2-1/2" NST inlets and one 5" storz outlet.
- 14.07 Three Elkhart, SM-20FG, 1-1/2" fog nozzles
- 14.08 Three Elkhart, high-rise nozzles, model B-275-TAF, 125 GPM nozzles
- 14.09 Two Elkhart model 4000-03-45 one-inch fog nozzles with NST threads
- 14.10 One Elkhart model SM-30PL, 2-1/2" fog nozzle
- 14.11 One Elkhart model B877A 2-1/2" Elk-O-Lite play pipe combination with stacked tips
- 14.12 Two Elkhart Rapid Action Monitor (R.A.M.) with Rapid Attack Nozzle and truck mount bracket
- 14.13 One Elkhart B-100-A 2-1/2" x 1-1/2" NST gated wye
- 14.14 One Akron model 1480 gated wye, 1-1/2" swivel female to two 1-1/2" male
- 14.15 Two 1-1/2" NST female to 1" NST male adapter
- 14.16 Three sets of Akron SS-523-MP single ended spanner set with 4 five-inch spanners with mounting bracket
- 14.17 One Akron style 3485 mini-stream shaper for 2-1/2" NST
- 14.18 One Akron style 2499 Quad Stacked Deluge Tips
- 14.19 Two Akron Butterfly Valve, 5" locking Storz inlet by 6" NST female long handle swivel outlet
- 14.20 One Akron Butterfly valve, swivel 5" locking Storz inlet by 4" NST female long handle swivel outlet.
- 14.21 Three 2-1/2" NST double males constructed of black finish aluminum alloy
- 14.22 Three 2-1/2" NST double female, swivel, constructed of black finish aluminum alloy
- 14.23 Three 2-1/2" to 1-1/2" NST reducers constructed of black finish aluminum alloy
- 14.24 Two Zico Quic-chock wheel chocks, model SAC-44 and SQCH-44-H folding chock holder
- 14.25 Eight 12-ounce number 12 white or grey duck floor runners measuring approximately 3-ft by 18-ft
- 14.26 Twenty-four 12-ounce number 12 white or grey duck salvage covers measuring approximately 12-feet by 18-feet
- 14.27 Two 6-lb flat head axes with yellow fiberglass handles
- 14.28 Two 6-lb pick head axes with yellow fiberglass handles
- 14.29 Two 6-ft, two 8-ft, two 10-ft fiberglass pike poles
- 14.30 Two 3-ft fiberglass pike poles with "D" handles
- 14.31 One 17-ft Little Giant model 17, type IAA, combination ladder
- 14.32 Two 36-inch Clemens wrecking tool, FireMark model C103 with "D" handle
- 14.33 Two 36-inch hooligan tool
- 14.34 Two 42-inch hooligan tool
- 14.35 Two Paratech Super Ram Bars
- 14.36 Two Paratech Pry-Axe
- 14.37 Two 42-inch bolt cutters, H.K. Porter #0590MHX or equal
- 14.38 Two 18-inch bolt cutters, H.K. Porter or equal

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- 14.39 Two WillBurt TAC Stick voltage detector with a padded carrying pouch
- 14.40 Two Glas-Master windshield cutting tool
- 14.41 One Elkhart model RA 2-1/2" cellar nozzle and applicator
- 14.42 Two 4-ft Akron piercing nozzles, 1-1/2" with ball valve
- 14.43 Ten Akron style 373 E-Z Lok nozzle holder, 2-1/2"
- 14.44 Five Akron style 373 E-Z Lok nozzle holder, 1-1/2"
- 14.45 Thirty Akron style 42 vertical tool bracket
- 14.46 Twenty Akron style 40 horizontal tool bracket
- 14.47 Twenty Akron style 1078 Sprinkler shutoff
- 14.48 Twenty sprinkler valves from Western Hose Handling Equipment Co., Portland, OR (888) 659-1009 or sprinkler stop valve company, or firesafetyplus.com, or Tele-Lite.
- 14.49 Four Vestank water vests with trombone type water pump
- 14.50 Ten rope hose tools, W.S. Darley A-T401 or equal
- 14.51 One SuperVac model 718G4-H gas powered fan
- 14.52 One Tempest model VSX-16 programmable PPV fan with variable speed electric controls
- 14.53 Two Extenda-Lite E-4650-POD-WG Extenda-POD with 4650 Beta light head, 55" that extends to 88" high, with chrome plated wire guard
- 14.54 Two Extenda-Lite E-4650-PL-WG-PLMT
- 14.55 Twenty NEMA L5-20 Woodhead Super-Safeway® 125V plug, Woodhead part 2647
- 14.56 Ten NEMA L5-20 Woodhead Super-Safeway® 125V connector, Woodhead part 2747
- 14.57 Five Akron Brass junction box with one NEMA L5-20P twist lock plug and four NEMA L5-20P twist lock connectors. The junction box will be yellow in color and provided with a EJB-VMT mounting bracket
- 14.58 Two Hilti DSH 900-16 Hand-held gas saw with 16" capacity. Kit is to include saw, blade guard, wet kit, reversible wheels, reversible flanges, maintenance set and tool set. Contact Rick Fike, Account Manager I & G, Greater Tulsa Area, P.O. Box 21148 I, Tulsa, OK 74121-1148 800-879-7000 rick.fike@hilti.com for details and quotes.
- 14.59 Six TEAM "Lightning" diamond blades with 1" arbor
- 14.60 Six TEAM "Piraya" diamond blades with 1" arbor
- 14.61 Six TEAM "Dyna II" carbide chip blades with 1" arbor
- 14.62 Six TEAM "Rescue" abrasive blades with 1" arbor
- 14.63 Three Stihl MS 460 R Magnum "Rescue" chainsaw with 20-inch bar Stihl #3949 chain and depth limiter.
- 14.64 One American Genesis Hand Vario manually operated combination style cutter/spreader
- 14.65 Four pair American Genesis Quick Crib slide chocks
- 14.66 One 20-lb stored pressure ABC type dry chemical fire extinguishers with a rating of no less than 20A:120B:C
- 14.67 One 20-lb CO2 fire extinguishers with rating of no less than 10B:C.
- 14.68 One 2-1/2 gallon Air-Pressurized-Water (APW) fire extinguishers

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- 14.69 Eight Gemtor model 531 pompier belt with hook. Two size medium, two size large, two size x-large, two size xx-large
- 14.70 Twelve Miller Manyard HP shock-absorbing lanyards, six feet in length. Each lanyard will be one-leg with locking snap hook at the harness and one large locking rebar hook at the anchor point.
- 14.71 Twelve Miller Titan T-Flex stretchable harness with rear D-ring. Four size medium, four size Large and four size XXL.
- 14.72 Five rope bags, orange in color and capacity of 150-ft of ½" rope. Bag is to have a grommet in the bottom and a draw string top. WS Darley A-Z108 or equal
- 14.73 1,000 feet of 3-inch double jacket fire hose coupled in 50-ft sections. See the Attachments and Addendum for the technical specifications for the hose.
- 14.74 250 feet of 3-inch double jacket fire hose coupled in 25-ft sections. See the Attachments and Addendum for the technical specifications for the hose.
- 14.75 300 feet of 2-inch double jacket fire hose. See the Attachments and Addendum for the technical specifications
- 14.76 1,000 feet of 1-3/4 double jacket fire hose. See the Attachments and Addendum for the technical specifications
- 14.77 300 feet of 1" single jacket forestry hose, green in color, coupled with 1" NST couplings every 50 ft. See the Attachments and Addendum for the technical specifications
- 14.78 100 feet of 1" single jacket forestry hose, green in color, coupled with 1" NST couplings every 25ft. See the Attachments and Addendum for the technical specifications
- 14.79 One spring driven cable reel for use as a power source or shore line for the apparatus. The reel is to be provided with 45-ft of 12-3 conductor and rated at 20 amperes. The reel will be provided with a ratchet lock and an adjustable guide arm. Grainger part 1TRB2
- 14.80 Two round point shovel with fiberglass / polypropylene handle, straight ergonomic. Grainger #3MD54 or equal
- 14.81 Two square point shove with fiberglass / polypropylene handle. Grainger #3MD56 or equal
- 14.82 Two #10 D-handle aluminum scoop shovel with fiberglass / polypropylene handle. Grainger #3MD36 or equal
- 14.83 Three straight blade 24" wide Neoprene squeegees, Grainger #1ZBZ4 or equal with handle Grainger #2CJP8 or equal
- 14.84 One 12-lb sledge hammer with fiberglass nonslip handle, Grainger #1TMZ8 or equal
- 14.85 Two spools of 250-ft per spool of 10-3 SJTOW flexible cord, black in color. Grainger #2TYL4 or equal
- 14.86 Two 14-piece electric and valve lock out – tag out kit, Grainger #1D711 or equal
- 14.87 Two Hilti 36-volt lithium ion reciprocating saw with 110-volt AC charger, two batteries and storage case. Hilti WSR 36A 3.9 AH Kit (2 Batteries) item # 03453679. Contact Rick Fike, Account Manager I & G, Greater Tulsa Area, P.O. Box 21148 I, Tulsa, OK 74121-1148 800-879-7000 rick.fike@hilti.com for details and quotes.
- 14.88 Two Hilti 36-volt lithium ion cordless circular saw with two batteries and 110-volt AC charger and storage case. Contact Rick Fike, Account Manager I & G, Greater Tulsa Area, P.O. Box 21148 I, Tulsa, OK 74121-1148 800-879-7000 rick.fike@hilti.com for details and quotes.
- 14.89 Two Hilti 18-volt lithium ion cordless cordless hammer drill/driver with two batteries, 110-volt AC charger and storage case. Contact Rick Fike, Account Manager I & G, Greater Tulsa Area, P.O. Box 21148 I, Tulsa, OK 74121-1148 800-879-7000 rick.fike@hilti.com for details and quotes.
- 14.90 Four Irwin drill and drive set, Grainger #1AVN1 or equal.
- 14.91 Twenty-five general duty polyethylene tarpaulins, blue/green reversible 15-ft x 20-ft Grainger # 2W696 or equal
- 14.92 Two commercial grade, 26-quart plastic mop bucket with removable wringer. The mop bucket is to have 3-inch swivel casters. Grainger # 5NY78 or equal
- 14.93 Two Fluke infrared thermometer with batter, protective boot, and nylon holster. Grainger #5YE68 or equal
- 14.94 Three 25-ft coils of ¼" ID, nylon coiled air hose with male rigid x male swivel connections. Grainger 1VEH8 or equal

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- 14.95 Three 50-ft coils of 1/4" ID, nylon coiled air hose with male rigid x male swivel connections. Grainger 1VEH9 or equal
- 14.96 Three 55-gallon drums of Chemguard CP5332 multi-purpose alcohol resistant film forming fluoroprotein foam concentrate, 3% hydrocarbon and 3% polar solvent (AR-FFFP) 3x3.
- 14.97 Three 55-gallon drums of Chemguard Class A Plus class "A" foam concentrate.
- 14.98 Three 8-PowerFlare Soft Kit battery powered LED flares, amber LED with yellow case and yellow storage bag.
- 14.99 Three Motorola XTS 5000 III Portable radio with Astro digital CAI operation, smartzone operation, DVP-XL encryption, UCM encryption hardware, NNTN4437B Impres NIMH rugged 2000MAH battery, H499 submersible, H64 yellow housing, and two (2) year encrypted express service plus. NO EXCEPTION
- 14.100 Three Motorola RNL5487B IMPRES® single unit charger 110V (Astro®; Digital). This comes with two NNTN4437B IMPRESS InMH 2000 mAh FM. Ruggedized battery for Motorola XTS 5000R portable radios. NO EXCEPTION
- 14.101 Ten Motorola NNTN4437B IMPRES® NiMH 2000 mAh FM, ruggedized battery for Motoroa XTS® 5000 portable radios. NO EXCEPTION
- 14.102 Two 12-volt storage/charger for a Scott Eagle Thermal Image Camera. Charger only. NO EXCEPTION
- 14.103 Two MSA model Evolution® 5200HD² Thermal Image Cameras (MSA 10097245) with a Vehicle TIC kit (MSA 10096886). NO EXCEPTION
- 14.104 One Survivair Salvage-Master water vacuum with squeegee and carpet adapters.
- 14.105 One MSA Altair 5 gas detector with combustible, oxygen, carbon monoxide, hydrogen sulfide and hydrogen cyanide sensors. The detector will be provided with a 12-volt vehicle charger, 120-volt charger, Galaxy calibration station with two cylinder stations and calibration gas. NO EXCEPTION

ITEMS PREVIOUSLY DESCRIBED IN THE BODY OF THE SPECIFICATIONS, **Do not duplicate.**

- 14.106 Section 1.24 of these specifications
- 14.107 Section 1.25 of these specifications

15.00 OPTIONS

15.01

16.00 ATTACHEMENTS AND ADDENDUM

NOTE: Each item will be assigned a number and will begin at the top of the page.

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16.01

TULSA FIRE DEPARTMENT
SPECIFICATION FOR
SINGLE JACKET FORESTRY HOSE
ONE (1) INCH FIRE HOSE
10-24-2009

INTENT

This specification applies to one (1) inch fire hose. The hose is intended to be used for delivering water and foam solutions during fire suppression activities. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

MATERIAL & WORKMANSHIP

All materials used in the fabrication of the fire hose will be the best quality normally used for the purpose in good commercial practice for the type designated. The workmanship will be of the highest quality. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

GUARANTEE

In addition to the standard guarantee, the manufacturer guarantees that each length of hose to be free against faulty materials and workmanship for a period of two years. If during this period, such faults develop, the unit or part affected is to be replaced at no cost to the City of Tulsa.

CONSTRUCTION

The hose will be double jacket and 100% mildew resistant.

LINING

The lining to be constructed of a single-ply extruded tube of synthetic polyurethane to resist ozone.

OUTER JACKET

The outer jacket is to be constructed of high strength, low stretch filament polyester. The outer jacket will be provided with a polymer impregnation that will provide additional abrasion resistance. Impregnated hose will meet the requirements of Mil-H-24606B for abrasion resistance.

COUPLINGS

The couplings to be light weight aluminum Red Head Style 77 with 1-inch NST threads, properly attached and tested by the manufacturer. The female swivels to have ball bearing connections and appropriate washers and gaskets.

DIMENSIONS

The internal dimension of the fire hose will not be less than one (1) inch.

HYDROSTATIC PRESSURE TEST

The hose is to have a straight burst pressure rating of no less than 900 psig and a service test pressure of no less than 300 psig.

KINK TEST

A full length of hose will stand without failure while kinked and at a hydrostatic pressure of 500 psi.

WEIGHT WITH COUPLINGS

The weight of fifty (50) feet of hose is 7 pounds without couplings.

MANUFACTURER SPECIFICATIONS

The hose is to be provided with a complete set of detailed specifications. Advertising materials will not be accepted as specification material.

COLOR

Green

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16.02

TULSA FIRE DEPARTMENT
SPECIFICATION FOR
DOUBLE JACKET
ONE AND THREE QUARTER (1-3/4) INCH FIRE HOSE
 03-15-97

INTENT

This specification applies to one and three quarter (1-3/4) inch fire hose. The hose is intended to be used for delivering water and foam solutions during fire suppression activities. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

MATERIAL & WORKMANSHIP

All materials used in the fabrication of the fire hose will be the best quality normally used for the purpose in good commercial practice for the type designated. The workmanship will be of the highest quality. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

GUARANTEE

In addition to the standard guarantee, the manufacturer guarantees that each length of hose to be free against faulty materials and workmanship for a period of ten years. If during this period, such faults develop, the unit or part affected is to be replaced at no cost to the City of Tulsa.

CONSTRUCTION

The hose will be double jacket and 100% mildew resistant.

LINING

The lining to be constructed of a single-ply-extrusion of a synthetic rubber. The finished form will be completely smooth, free of pits or other imperfections, and resistant to ozone. The wall thickness of the lining is to be between .040" and .052" exclusive of the backing. The shore hardness is to be 50 with a margin of error of plus or minus 5. The ultimate tensile strength is to be no less than 1,200 psi. The elongation is to be no less than 400% (1"-5").

OUTER JACKET

The outer jacket is to be constructed of high strength, low stretch filament polyamide six (6) staple high bulked yarn comprising an entangled convoluted mass of continuous filaments. The yarn will allow total saturation of a Hypalon compound. Types of yarn, such as spun polyester, that will not accept total saturation of hypalon compound are not acceptable. Prior to the jackets and liner being combined, each outside jacket must be completely N-Fused by a mechanical process to provided complete coverage of the Hypalon compound. Hypalon applied to a finished hose, allowing varied absorption to the inside jacket is not acceptable.

COUPLINGS

The couplings to be light weight aluminum Red Head Style 77 with 1-1/2 inch NST threads, properly attached and tested by the manufacturer. The female swivels to have ball bearing connections and appropriate washers and gaskets.

DIMENSIONS

The internal dimension of the fire hose will not be less than one and three quarter (1-3/4) inches. Each length of hose will be fifty (50) feet in length when measured from the back end of the male coupling to the back end of the female coupling.

HYDROSTATIC PRESSURE TEST

The hose is to have a straight burst pressure rating of no less than 1,200 psig and a hydrostatic test pressure of no less than 800 psig.

KINK TEST

A full length of hose will stand without failure while kinked and at a hydrostatic pressure of 600 psi.

FRICITION LOSS

The friction loss within the hose is not to exceed 31 psi in 100 feet of hose while flowing 150 gallons per minute.

WEIGHT WITH COUPLINGS

The weight of fifty (50) feet of hose is not to exceed 20 pounds without couplings.

MANUFACTURER SPECIFICATIONS

The hose is to be provided with a complete set of detailed specifications. Advertising materials will not be accepted as specification material.

COLOR

Yellow

6.03

TULSA FIRE DEPARTMENT
SPECIFICATION FOR
LIGHT WEIGHT HIGH RISE USE
TWO (2) INCH FIRE HOSE
 03-15-97

INTENT

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This specification applies to two (2) inch fire hose. The hose is intended to be used for delivering water during fire suppression activities within high rise buildings. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

MATERIAL & WORKMANSHIP

All materials used in the fabrication of the fire hose will be the best quality normally used for the purpose in good commercial practice for the type designated. The workmanship will be of the highest quality. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

GUARANTEE

In addition to the standard guarantee, the manufacturer guarantees that each length of hose to be free against faulty materials and workmanship for a period of ten years. If during this period, such faults develop, the unit or part affected is to be replaced at no cost to the City of Tulsa.

CONSTRUCTION

The hose will be 100% mildew resistant. The hose will be made from 100 percent high tenacity synthetic yarn, circularly woven and completely protected and locked-in by highly resistant synthetic nitrile rubber forming a single homogeneous construction without the use of glues or adhesives.

COUPLINGS

The couplings to be 1-1/2 inch NST light weight aluminum Red Head couplings. The female couplings to have ball bearing swivels.

DIMENSIONS

The internal dimension of the fire hose will not be less than two (2) inches. Each length of hose will be fifty (50) feet in length when measured from the back end of one coupling to the back end of the other coupling.

HYDROSTATIC PRESSURE TEST

The hose is to have a straight burst pressure rating of no less than 900 psig and a hydrostatic test pressure of no less than 600 psig.

FRICTION LOSS

The friction loss within the hose is not to exceed 9 psi in 100 feet while flowing 150 gallons per minute.

WEIGHT WITH COUPLINGS

The weight of fifty (50) feet of hose is not to exceed 16 pounds without couplings.

MANUFACTURER SPECIFICATIONS

The hose is to be provided with a complete set of detailed specifications. Advertising materials will not be accepted as specification material.

COLOR Blue

16.04

TULSA FIRE DEPARTMENT
SPECIFICATION FOR
DOUBLE JACKET
THREE (3) INCH FIRE HOSE
03-15-97

INTENT

This specification applies to three (3) inch fire hose. The hose is intended to be used for delivering water and foam solutions during fire suppression activities. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

MATERIAL & WORKMANSHIP

All materials used in the fabrication of the fire hose will be the best quality normally used for the purpose in good commercial practice for the type designated. The workmanship will be of the highest quality. The hose is to be fully compliant with the current edition of NFPA 1961 standard on *Fire Hose*.

GUARANTEE

In addition to the standard guarantee, the manufacturer guarantees that each length of hose to be free against faulty materials and workmanship for a period of ten years. If during this period, such faults develop, the unit or part affected is to be replaced at no cost to the City of Tulsa.

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CONSTRUCTION

The hose will be double jacket and 100% mildew resistant.

LINING

The lining to be constructed of a single-ply-extrusion of a synthetic rubber. The finished form will be completely smooth, free of pits or other imperfections, and resistant to ozone. The wall thickness of the lining is to be between .040" and .052" exclusive of the backing. The shore hardness is to be 50 with a margin of error of plus or minus 5. The ultimate tensile strength is to be no less than 1,200 psi. The elongation is to be no less than 400% (1"-5").

OUTER JACKET

The outer jacket is to be constructed of high strength, low stretch filament polyamide six (6) staple high bulked yarn comprising an entangled convoluted mass of continuous filaments. The yarn will allow total saturation of a Hypalon compound. Types of yarn, such as spun polyester, that will not accept total saturation of hypalon compound are not acceptable. Prior to the jackets and liner being combined, each outside jacket must be completely N-Fused by a mechanical process to provided complete coverage of the Hypalon compound. Hypalon applied to a finished hose, allowing varied absorption to the inside jacket is not acceptable.

COUPLINGS

The couplings to be light weight aluminum Red Head Style 77 with 2-1/2 inch NST threads, properly attached and tested by the manufacturer. The female swivels to have ball bearing connections and appropriate washers and gaskets.

DIMENSIONS

The internal dimension of the fire hose will not be less than 3 (3) inches. Each length of hose will be fifty (50) feet in length when measured from the back end of the male coupling to the back end of the female coupling.

HYDROSTATIC PRESSURE TEST

The hose is to have a straight burst pressure rating of no less than 1,200 psig and a hydrostatic test pressure of no less than 800 psig.

KINK TEST

A full length of hose will stand without failure while kinked and at a hydrostatic pressure of 600 psi.

FRICTION LOSS

The friction loss within the hose is not to exceed 5 psi in 100 feet of hose while flowing 250 gallons per minute.

WEIGHT WITH COUPLINGS

The weight of fifty (50) feet of hose is not to exceed 42 pounds without couplings.

MANUFACTURER SPECIFICATIONS

The hose is to be provided with a complete set of detailed specifications. Advertising materials will not be accepted as specification material.

COLOR

Yellow

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EXHIBIT A
BID FORM INCLUDING DELIVERY AND PRICING

1. Delivery. If your Bid is accepted and a contract is executed, state the number of days you need to deliver the Goods and/or to begin providing Services:

You must be able to deliver the Goods and/or Services as specified in your Bid. Failure to do so may result in City terminating your contract or canceling the Purchase Order, pursuing collection under any performance bond, as well as seeking any other damages to which it may be entitled in law or in equity.

2. Pricing

Item		Quantity	Unit Cost	Extended Cost
1	Nominal 114-ft. Articulating Aerial Platform Type Fire Apparatus	3		
TOTAL COST:				

Bidder's Company Name _____

Authorized Signature Here ▶ _____

Printed Name: _____

RETURN THIS ENTIRE BID PACKET