Big Bear Fire Authority

BIG BEAR FIRE AUTHORITY
NOTICE & AGENDA OF ADMINISTRATIVE COMMITTEE SPECIAL MEETING
November 23, 2021
4:00 P.M.

Pursuant to Government Code Section 54953(e)(1)(A), relating to a proclaimed state of emergency and required or recommended social distancing measures, there is no physical location for members of the public to participate. In compliance with the Brown Act, members of the public may observe and participate in the meeting as described below.

The Public may observe this meeting by:

- Calling (669) 900-6833 with meeting ID: or;
- Join Zoom Meeting online at
- https://us02web.zoom.us/j/84577387781?pwd=b1N3ZzgvT05hZFJGVkdZblkvWWd0UT09
- Meeting ID: 845 7738 7781with passcode 982978

This meeting will be recorded. Contact the Board Secretary to receive a copy of the recording.

Members of the public may provide comments on agenda items in either of the following manners:

1. Providing Oral Comments During Meeting. To provide comments during the meeting, join the Zoom meeting by computer, mobile phone, or dial-in number. On Zoom video conference by computer or mobile phone, use the "Raise Hand" feature. This will notify the Secretary that you wish to speak during a specific item on the agenda or during non-agenda Public Comment. If joining the meeting using the Zoom dial-in number, you can raise your hand by pressing *9. Comments will be limited to three (3) minutes. Please be aware that the Chair has the authority to reduce equally each speaker's time to accommodate a large number of speakers.

2. Written Comments. Written public comments must be submitted via email to publicmeetingcomments@bigbearfire.org on or before Tuesday, November 23, 2021, at 1:00 p.m. Please limit comments to 300 words or less. If your comment is related to a specific Agenda item, please identify the Agenda item in the subject of your email.

To: Vice Chairman John Green
Director Rick Herrick
Director Bynette Mote
Director Al Ziegler
Fire Chief Jeff Willis
Assistant Chief-Fire Marshal Mike Maltby
Director of Business Services Kristin Mandolini
Board Secretary Chardelle Smith
Authority Counsel Nicholaus Norvell
Captain Norman Dykesten
Local Media

CC: Chairman Randall Putz
Director Alan Lee
Director Perry Melnick
Director Karyn Oxandaboure
Director John Russo
Director Larry Walsh

OPEN SESSION

CALL TO ORDER

MOMENT OF SILENCE / PLEDGE OF ALLEGIANCE

ROLL CALL

DISCUSSION ITEMS

1. **Findings to Continue Holding Remote/Teleconference Meetings Pursuant to Assembly Bill 361**

   Administrative Committee to find and determine the Covid-19 State of Emergency remains in effect; the Committee has reconsidered the circumstances of the State of Emergency; state or local officials continue to impose or recommend measures to promote social distancing; and this Committee meeting and subsequent Committee meetings will proceed in compliance with Government Code section 54953(e) for the next 30 days.

2. **Annual Fire Hazard Abatement Program**

   Administrative Committee consideration to terminate the contract with County of San Bernardino Land Use Services and provide Annual Hazard Abatement Program in house. Committee to provide further direction to staff.

   Attachment 2A: Fire Hazard Abatement Services Contract

3. Ordinance for Establishing Penalties for Violations of the Fire Code

Administrative Committee consideration to recommend to the Board to approve and accept Ordinance NO. BBFA21-002 to authorize the Authority to establish penalties for violations of the fire code.

Attachment 3A: Ordinance NO. BBFA21-002

4. Ladder Truck "Arrow XT Mid Mount Tower"

Administrative Committee consideration to recommend to the Board to approve Scope of Work and Lease Purchase Terms with Pierce for the Ladder Truck Purchase.

Attachment 4A: Scope of Work
Attachment 4B: Pierce Terms of Lease
Attachment 4C: Purchase Agreement
Attachment 4D: Pre-Payment Option

5. 3-Year Fleet Replacement Plan

Administrative Committee discussion of accelerating the 3-year Fleet Replacement Schedule.

Attachment 5A: Approved 3-Year Fleet Replacement Plan

ADJOURNMENT

I hereby certify under penalty of perjury, under the laws of the State of California, the foregoing agenda was posted in accordance with the applicable legal requirements. Dated this 22th day of November, 2021.

Chardelle Smith

Chardelle Smith, Board Secretary

The Big Bear Fire Authority wishes to make all of its public meetings accessible to the public. If you need special assistance to participate in this meeting, please contact Board Secretary Chardelle Smith at 909-866-7566. Notification prior to the meeting will enable the Fire Authority to make reasonable arrangements to ensure accessibility to this meeting.

SAN BERNARDINO COUNTY

FAS

STANDARD CONTRACT

FOR COUNTY USE ONLY

☒ New ☐ Change ☐ Cancel	FAS Vendor Code	SC	Dept. WAB	A	Contract Number 15-496
ePro Vendor Number:					ePro Contract Number
County Department: Land Use Services		Dept. WAB	Orgn. WAB		Contractor's License No.
County Department Contract Representative: Andy Wingert, Code Chief		Telephone (909)387-8178			Total Contract Amount $47,317.56

Contract Type: ☒ Revenue ☐ Encumbered ☐ Unencumbered ☐ Other:

If not encumbered or revenue contract type, provide reason:

Commodity Code	Contract Start Date	Contract End Date	Original Amount	Amendment Amount
	07/1/2015		$	

Fund	Dept.	Organization	Appr.	Obj/Rev Source	GRC/PROJ/JOB No	Amount
AAA	CEN	ENF		9800		$ 47,317.56
						$
						$

Project Name: Fire Hazard Abatement Svcs – Big Bear Fire Authority

Estimated Payment Total by Fiscal Year

FY	Amount	I/D	FY	Amount	I/D

THIS CONTRACT is entered into in the State of California by and between the County of San Bernardino, hereinafter called the County, and

Name: BIG BEAR FIRE AUTHORITY — hereinafter called FIRE AUTHORITY

Address: 41090 Big Bear Boulevard

Big Bear Lake, CA 92315

Telephone: (909) 866 - 7566 — Federal ID No. or Social Security No.:

IT IS HEREBY AGREED AS FOLLOWS:

This Agreement is entered into this 1st day of July, 2015, by and between the County of San Bernardino Land Use Services Department (LUSD) and The Big Bear Fire Authority (FIRE AUTHORITY).

WHEREAS, LUSD administers a Fire Hazard Abatement Program within the unincorporated areas of San Bernardino County pursuant to San Bernardino County Code Section 23.0301, et seq.;

WHEREAS, FIRE AUTHORITY was created through a Joint Exercise of Powers Agreement by and between the Big Bear City Community Services District and the Big Bear Lake Fire Protection District, for the purpose of fire prevention, suppression, and fire hazard abatement;

Auditor-Controller/Treasurer/Tax Collector Use Only		*CAO Use Only*	
☐ Contract Database ☐ FAS		Not required for mid fiscal year cancellations	
Input Date	Keyed By	Effective Date	Analyst Initials

WHEREAS, the area of the FIRE AUTHORITY is the geographic area encompassing the total combined jurisdictional boundaries of the Big Bear Community Services District and the Big Bear Lake Fire Protection District;

WHEREAS, FIRE AUTHORITY has the power to enter into contracts for services with local government agencies;

WHEREAS, FIRE AUTHORITY desires that fire hazard abatement services be provided within its jurisdiction by LUSD and LUSD agrees to perform these services as set forth herein;

WHEREAS, FIRE AUTHORITY desires LUSD to enforce those provisions of FIRE AUTHORITY Ordinance No. BBFA2014-001 relating to fire hazard abatement, administration, and enforcement; and designates LUSD enforcement officers as FIRE AUTHORITY fire code officials authorized to carry out the enforcement of the Ordinance's fire hazard abatement;

WHEREAS, FIRE AUTHORITY has the funds available to recompense LUSD for fire hazard abatement services in the areas of the FIRE AUTHORITY's responsibility; and

WHEREAS, FIRE AUTHORITY finds LUSD qualified to provide fire hazard abatement services in the areas of the FIRE AUTHORITY's responsibility.

NOW THEREFORE, LUSD and FIRE AUTHORITY mutually agree to the following terms and conditions:

I. LUSD GENERAL RESPONSIBILITIES

A. LUSD will perform fire hazard abatement, administration, and enforcement in accordance with the fire hazard abatement, administration, and enforcement provisions and requirements of FIRE AUTHORITY's Ordinance No. BBFA2014-001.

II. FIRE AUTHORITY GENERAL RESPONSIBILITIES

A. FIRE AUTHORITY shall authorize LUSD to perform fire hazard abatement, administration, and enforcement within FIRE AUTHORITY areas and shall designate LUSD enforcement officers as FIRE AUTHORITY fire code officials and designees of the fire chief in order to carry out the above stated Ordinance's fire hazard abatement, administration, and enforcement provisions and requirements.

B. FIRE AUTHORITY shall compensate LUSD for services as set forth in **Section III SERVICES PROVIDED**.

III. SERVICES PROVIDED

LUSD's Fire Hazard Abatement Program will provide the following services to the FIRE AUTHORITY:

1. Conduct initial property survey once per year to locate and identify fire hazards.

2. Prepare and mail abatement notices to the owners of the properties in violation.

3. Conduct follow-up inspections to determine compliance.

4. Conduct enforcement operations for properties that have not been brought into compliance, including but not limited to, issuance of administrative citations that subject the owners to civil monetary

penalties, and conducting abatement of violations at the owners' expense, with said properties subject to having a lien placed upon it.

5. Respond to calls for service consisting generally of complaints received from the public concerning properties with fire hazards.

6. Provide assistance with telephone calls and written correspondence relating to the notices and administrative citations.

7. Enforce the provisions of the FIRE AUTHORITY Ordinance, stated above, with respect to any and all properties LUSD deems necessary for the public health, safety and welfare.

IV. COMPENSATION

A. FIRE AUTHORITY shall compensate the LUSD for services as set forth in Section III SERVICES PROVIDED.

B. Compensation for this Agreement is based on the number of parcels identified and verified by the San Bernardino County Land Use Services Department. The FIRE AUTHORITY'S contract rate per parcel per survey is $1.74 and there are 27,194 parcels to be serviced for a total of $ 47,317.56 per year. In the event there are additional parcels identified for services, the LUSD will contact the FIRE AUTHORITY for approval prior to providing services on the additional parcels.

C. LUSD will invoice FIRE AUTHORITY by December of each contract year for services provided based on number of parcels serviced during that timeframe. Payment is due sixty (60) days after date of invoice.

D. Payment for services shall be by check or money order, payable to "County of San Bernardino," and shall be mailed or delivered to the address listed in Section XIV NOTICES of this Agreement.

E. The Director of LUSD, or authorized designee, has the authority to determine the contract cost per parcel and submit a new proposed cost per parcel no later than January 1 to be effective May 1 of each year. If no new cost per parcel is proposed by the LUSD, then the previous year's cost per parcel shall be applicable for the ensuing year. If a rate change is proposed, the FIRE AUTHORITY shall then have sixty (60) days in which to notify the LUSD in writing of their decision to reject such new cost per parcel and terminate this Agreement or accept the new cost per parcel and continue this Agreement for the ensuing year.

IV. ENFORCEMENT

A. In the event of a property owner's noncompliance with a notice to abate, the FIRE AUTHORITY authorizes the LUSD to conduct the following enforcement operations within the FIRE AUTHORITY'S jurisdiction and geographical area:

1. Pursuant to Government Code § 53069.4, administrative citations and penalties in the same manner as provided in § 11.0208 of the San Bernardino County Code, adopted herein for this specific purpose.

2. Criminal actions pursuant to San Bernardino County Code § 23.0317 in the same manner as provided in § 11.0206 of the San Bernardino County Code, adopted herein for this specific purpose.

3. Civil actions pursuant to San Bernardino County Code § 23.0318 in the same manner as provided in § 11.0207 of the San Bernardino County Code, adopted herein for this specific purpose.

B. FIRE AUTHORITY waives any and all claims to recovery of any and all monetary enforcement penalties and/or abatement costs sought and/or recovered by LUSD as a result of any and all enforcement actions taken against owners and/or occupants of properties subject to this Agreement and hereby assigns all of its rights to all such claims to the LUSD.

V. APPLICABLE LAW

Both FIRE AUTHORITY and LUSD agree and acknowledge that his Agreement shall be construed and interpreted and enforced in accordance with the laws of the State of California. The Parties further agree that jurisdiction and venue for any legal action based upon this Agreement shall lie with the Superior Court of the State of California, in and for the County of San Bernardino.

VI. ASSIGNMENT

Neither this Agreement nor any clause or provision contained herein may be assigned, transferred or released without the express written consent of the parties here to.

VII. CHANGES OR MODIFICATIONS

No part of this Agreement may be modified, altered, amended, waived or changed without the express written consent of both parties, signed by the authorized representative(s) of LUSD and FIRE AUTHORITY.

VIII. RECIPROCAL/MUTUAL INDEMNITY – HOLD HARMLESS

A. FIRE AUTHORITY agrees to indemnify and hold harmless LUSD, its officers, employees, agents and volunteers from any and all claims, losses, actions and/or liabilities for injury to persons and damage to property arising out of any negligent act or omission of FIRE AUTHORITY, its officers, employees, agents or volunteers in connection with the performance of this Agreement.

B. LUSD agrees to indemnify and hold harmless FIRE AUTHORITY, its officers, employees, agents and volunteers from any and all claims, liabilities and/or actions for injury to persons and damage to property arising out of any negligent act or omission of LUSD, its officers, employees, agents or volunteers in connection with the performance of this Agreement.

IX. SELF-INSURANCE

LUSD and FIRE AUTHORITY are authorized self-insured public entities for purposes of Professional Liability, General Liability, Automobile Liability and Workers' Compensation and warrant that through their respective programs of self-insurance, they have adequate coverage or resources to protect against liabilities arising out of the performance of the terms, conditions or obligations of this Agreement.

X. COMPARATIVE FAULT

In the event that LUSD and/or FIRE AUTHORITY are determined to be comparatively at fault for any claim, action, loss or damage which results from their respective obligations under this Agreement, LUSD and/or FIRE AUTHORITY shall indemnify the other to the extent of its comparative fault.

XI. TERM

This Agreement shall take effect on the date it is signed by both parties and will remain in effect until terminated by either party in accordance to the provisions set forth in Section XII EARLY TERMINATION.

XII. EARLY TERMINATION

A. This Agreement may be terminated without cause upon sixty (60) days written notice by either party. The Fire Chief, or his/her appointed designee, is authorized to exercise FIRE AUTHORITY'S rights with respect to any termination of this Agreement. The Director of LUSD, or his/her appointed designee, has authority to terminate this Agreement on behalf of LUSD.

B. Fire Authority will be invoiced for unpaid services prior to the termination date. Payment is due within sixty (60) days of invoice date.

XIII. MISREPRESENTATION

If during the course of the administration of the Agreement, the it is determined that either party has made a material misstatement or misrepresentation or that materially inaccurate information has been provided to either party by the other, this Agreement may be immediately terminated.

XIV. NOTICES

When notices are required to be given pursuant to this Agreement, the notices shall be in writing and mailed or hand delivered with receipt to the following respective addresses listed below:

LUSD:
County of San Bernardino
Land Use Services Department
ATTN: Andy Wingert, Code Chief
385 N. Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0187

FIRE AUTHORITY:
The Big Bear Fire Authority
ATTN: Jeff Willis, Fire Chief
41090 Big Bear Blvd.
Big Bear Lake, CA 92315

Each party shall notify the other in writing of any change in mailing address and/or physical location within ten (10) business days of the change, and shall immediately notify each other of changes in telephone or fax numbers.

XV. SEVERABILITY

If any portion of this Agreement is declared by a Court of competent jurisdiction to be invalid, illegal, unconstitutional, or unenforceable, such portion shall be deemed severed.

XVI. ATTORNEYS' FEES AND COSTS

In the event either of the parties resorts to litigation to resolve any dispute or claim of any kind arising from any of the rights or duties established by this Agreement, or to enforce or prevent the breach of any provision of this Agreement as set forth herein or for any other purpose, for damages by reason of any alleged breach of any provision of this Agreement, or for declaration of such party's rights or obligations under this Agreement, or for any other judicial remedy at law or at equity; both parties, their successors in interest, representatives, employees, and agents shall each bear their own attorney's fees and costs relating to all expenses incurred through such litigation regardless of the nature of the action.

XVII. DISPUTES

The Parties agree to attempt to resolve any disputes arising out of this Agreement informally and in good faith. Each Party reserves the right to suspend work or terminate this Agreement in the event a dispute is not satisfactorily resolved.

XVIII. FULL UNDERSTANDING

This Agreement represents the full and complete understanding of the parties and supersedes all prior oral and written agreements, contracts, or understanding between the parties. Any amendment to this Agreement shall be in writing, signed by both parties.

XIX. SUCCESSORS AND ASSIGNS

Each of the terms of this Agreement shall be binding upon each of the parties and their respective successors-in-interest, assigns, designees, and their respective representatives, agents, and employees thereof.

XX. CONCLUSION

A. This Agreement, consisting of seven (7) pages, is the full and complete document describing services to be rendered by LUSD to FIRE AUTHORITY.

B. The signatures of the parties affixed to this Agreement affirm that they are duly authorized to commit and bind their respective institutions to the terms and conditions set forth in this document.

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IN WITNESS WHEREOF, the parties have caused this Agreement to be executed as of the day and year written below.

COUNTY OF SAN BERNARDINO

▶ _____
James Ramos, Chairman, Board of Supervisors

Dated: JUN 2 3 2015

SIGNED AND CERTIFIED THAT A COPY OF THIS DOCUMENT HAS BEEN DELIVERED TO THE CHAIRMAN OF THE BOARD

Laura H. Welch
Clerk of the Board of Supervisors
of the County of San Bernardino

By _____
Deputy

THE BIG BEAR FIRE AUTHORITY
(Print or type name of corporation, company, contractor, etc.)

By ▶ _____
(Authorized signature - sign in blue ink)

Name JEFF Willis
(Print or type name of person signing contract)

Title Fire Chief
(Print or Type)

Dated: 6-15-15

Address PO Box 2830
Big Bear Lake, CA 92315

Approved as to Legal Form	Reviewed by Contract Compliance	Presented to BOS for Signature
▶ _____	▶ _____ for	▶ _____
John Tubs II, Deputy County Counsel	Tricia Munoz, Staff Analyst II	Tom Hudson, Director
Date 6/16/15	Date 6-16-15	Date 6.16.2015

REPORT/RECOMMENDATION TO THE BOARD OF SUPERVISORS OF SAN BERNARDINO COUNTY, CALIFORNIA AND RECORD OF ACTION

June 23, 2015

FROM: **TOM HUDSON, Director**
Land Use Services Department

SUBJECT: **REVENUE CONTRACT BETWEEN COUNTY OF SAN BERNARDINO LAND USE SERVICES DEPARTMENT AND THE BIG BEAR FIRE AUTHORITY FOR FIRE HAZARD ABATEMENT SERVICES**

RECOMMENDATION(S)

Approve revenue **Contract No. 15-496** with Big Bear Fire Authority, for Land Use Services Department to provide fire hazard abatement services, to the Big Bear Fire Authority in an estimated annual amount of $47,318, commencing on July 1, 2015, and continuing until terminated.
(Presenter: Andy Wingert, Chief of Code Enforcement, 387-8178)

BOARD OF SUPERVISORS COUNTY GOALS AND OBJECTIVES

Operate in a Fiscally-Responsible and Business-Like Manner.
Maintain Public Safety.
Pursue County Goals and Objectives by Working with Other Governmental Agencies.

FINANCIAL IMPACT

Approval of this revenue contract will not require the use of any additional Discretionary General Funding (Net County Cost). The amount of this Agreement is based on the number of parcels inspected by County Land Use Services Department (LUSD) Fire Hazard Abatement (FHA) staff at a rate of $1.74 per parcel. The total number of parcels inspected under this agreement is 27,194. This parcel count has been verified by County FHA staff. The estimated total of $47,318 will be included in a future Quarterly Countywide Budget Report presented to the Board of Supervisors (Board) for approval and will be included in future recommended budgets.

BACKGROUND INFORMATION

LUSD provides fire hazard and weed abatement services through the FHA Program in the unincorporated areas of the Mountain, Desert, and Valley regions of San Bernardino County, as well as some incorporated cities. The Big Bear Fire Authority (BBFA) is part of the Mountain region. The LUSD FHA program has provided contract services to the incorporated City of Big Bear Lake Fire Protection District (BBLFPD) and unincorporated Big Bear City Community

cc: LUSD-Wingert w/agree
Contractor c/o Dept. w/agree
ATC-Acct. Pay. Mgr. w/agree
EBIX-BPO c/o Risk
LUSD-Hudson
CAO-Snoke
File -w/agree
mc 6/30/15

ITEM 50

Record of Action of the Board of Supervisors

APPROVED (CONSENT CALENDAR)
COUNTY OF SAN BERNARDINO
Board of Supervisors

MOTION	MOVE	AYE	AYE	SECOND	AYE
	1	2	3	4	5

LAURA H. WELCH, CLERK OF THE BOARD

BY _____

DATED: June 23, 2015

Rev 7-29-14

Services District Fire Department (CSD) since 1987. In 2014, the BBLFPD and CSD merged to form the BBFA.

On June 1, 1987, the Board approved the most recent contract (agreement 87-298) with the CSD and on June 10, 2010 (Item No. 62), the Board approved the most recent contract, in the amount of $19,314, with the BBLFPD, allowing for FHA services. These agreements did not expire, but this new revenue contract is necessitated by the creation of the BBFA.

Approval of this new contract ensures adequate compensation to the County for the current level of fire hazard abatement services provided by the County's FHA Program and will ensure the fire hazard abatement policies and procedures remain uniform in the Mountain Region of the County.

This contract will become effective on July 1, 2015, and will continue until terminated. The agreement may be terminated without cause upon 60 days written notice by either party. Amendments to this contract to ensure FHA costs to provide this service are fully recovered will be submitted for Board approval in future years, as necessary.

REVIEW BY OTHERS

This item has been reviewed by County Counsel (John Tubbs II, Deputy County Counsel, 387-5455) on April 24, 2015; Finance (Luther Snoke, Administrative Analyst, 387-4345) on June 2, 2015; and County Finance and Administration (Mary Jane Olhasso, Assistant Executive Officer, 387-4599) on June 5, 2015.

ORDINANCE NO. BBFA21-002

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE BIG BEAR FIRE AUTHORITY, A CALIFORNIA JOINT POWERS AUTHORITY, ESTABLISHING PENALTIES FOR VIOLATIONS OF THE FIRE CODE

WHEREAS**,** the Big Bear Fire Authority ("Authority") exists pursuant to the laws of the state of California and that certain Joint Powers Agreement entered into by and between the Big Bear City Community Services District and the Big Bear Lake Fire Protection District, a subsidiary fire protection district of the City of Big Bear Lake ("City"); and

WHEREAS, Health and Safety Code section 13869.7 authorizes the Authority to adopt building standards relating to fire and panic safety that are more stringent than those building standards adopted by the State Fire Marshal and contained in the California Building Standards Code, subject to the ratification of the City and San Bernardino County; and

WHEREAS, the Authority has adopted a more stringent version of the California Fire Code and California Residential Code with local amendments (collectively, "Fire Code") in compliance with section 13869.7 and the Authority is authorized by such adoption to enforce the Fire Code; and

WHEREAS, the Authority desires to encourage compliance with the Fire Code; and

WHEREAS, Government Code section 53069.4 authorizes the Authority to issue administrative citations to enforce its ordinances in addition to criminal, civil or any other legal remedies established by law, which may be pursued to address violations of the Fire Code; and

WHEREAS, currently, there is a procedure for the issuance and appeal of administrative citations for Fire Code violations but the Authority desires to establish an alternative administrative citation procedure and additional penalties, as well as make its enforcement provisions more uniform and consistent with that of San Bernardino County; and

WHEREAS, the purpose of this Ordinance is to establish an alternative procedure for the issuance and appeal of administrative citations and other penalties in the enforcement of the Fire Code; and

WHEREAS, at the discretion of the Authority, violations of the Fire Code may be addressed through the institution of a criminal action, a civil action, or an administrative action as set forth in this Ordinance.

NOW THEREFORE, the Board of Directors of the Big Bear Fire Authority does ordain as follows:

Section 1. Penalties and Applicability

A. No person shall violate or fail to comply with any provision or requirement of the Authority Codes, as defined herein, or maintain a public nuisance subject to abatement under Authority Codes. Any person who shall violate or fail to comply with any provision or requirement of the Authority Codes, or a condition of any permit issued pursuant to Authority Codes, or who maintains a public nuisance subject to abatement under Authority Codes, shall be guilty of a misdemeanor unless (1) such a violation or failure is designated as an infraction or is subsequently prosecuted as an infraction, in which case such person shall be guilty of an infraction; or (2) such a violation or failure is prosecuted exclusively as a civil administrative action pursuant to this Ordinance. Any person, business, organization corporation, or other entity that fails to pay an administrative fine or to comply with an Administrative Order is guilty of a misdemeanor as provided in this Ordinance.

B. All remedies and penalties provided in this Ordinance shall be cumulative and discretionary and not exclusive of other applicable provisions of this Ordinance or applicable State law. Notwithstanding any remedies, penalties and procedures set forth in other Authority Codes, all remedies, penalties and procedures provided in this Ordinance shall apply at the discretion of the Authority and Enforcement Officers.

C. Use of this Ordinance shall be at the sole discretion of the Authority and Enforcement Officers.

Section 2. Definitions

A. "Appeals Board" shall mean the Appeals Board established by section 109.1 of the California Fire Code and related laws, as amended by an ordinance of the Authority from time to time, including, but not limited to, Authority Ordinance No. BBFA2020-001.

B. "Authority Codes" shall mean the Fire Code (as defined herein), this Ordinance, other codes or ordinances of the Authority, and other applicable laws enforceable by the Authority.

C. "Continuing Violation" shall mean an ongoing violation of the Authority Codes that persists in excess of one day.

D. "Enforcement Officer" shall mean that person or persons specifically designated by Authority Codes or the Fire Chief to enforce any provisions of the Authority Codes.

E. "Fire Code" shall mean the California Fire Code, California Residential Code, and related laws, as may be amended by an ordinance of the Authority from time to time, including, but not limited to, Authority Ordinance No. BBFA2020-001.

F. "Individual Violation" shall mean an isolated violation of Authority Codes that exists or persists for one full day or less.

G. "Responsible Person" shall mean any of the following:

(1) Any person or entity that causes, maintains, suffers, permits, aids, abets, or otherwise allows a violation of Authority Codes, by his or her action or failure to act.
(2) Any person or entity that occupies, owns, possesses, or controls any parcel of real property in the Authority upon which a violation of Authority Codes occurs or exists.
(3) Any trustee of any trust that holds legal title to any parcel of real property in the Authority upon which a violation of the Authority Codes is maintained.
(4) Any person or entity that owns, possesses, manages, or controls any business within the Authority that is responsible for causing or maintaining a violation of Authority Codes.

Section 3. Administrative Citation

A. Whenever an Enforcement Officer charged with the enforcement of any provision of Authority Codes determines that a violation of a provision of Authority Codes has occurred, the Enforcement Officer shall have the authority to issue an administrative citation to any person responsible for the violation.

B. Authority to Issue an Administrative Citation

(1) Continuing Violation that does not create an immediate danger to public health and safety. Where the violation is a Continuing Violation that does not create an immediate danger to public health and safety, the citation shall set forth a reasonable period of time, which shall not be less than 15 days, for the person responsible for the continuing violation to correct or otherwise remedy the violation prior to the imposition of the administrative fine.

(2) Continuing Violation that creates an immediate danger to public health and safety. Where a violation is a Continuing Violation that constitutes an immediate danger to the public health and safety, the property owner shall be provided notice to correct the violation within a maximum of two (2) hours from when the verbal or written notice was received. Depending upon the severity of the violation, if the violation is not corrected within the two-hour time period, the Authority shall have the option to initiate abatement procedures or impose the administrative citation provisions set forth herein.

(3) Individual Violation that does not create an immediate danger to public health and safety. Where a violation is an Individual Violation that does not create an immediate danger to public health and safety, a written notice to correct the violation shall be issued for the first offense. For second and subsequent violations of the same code provision, the person responsible for the violation shall not have an opportunity to correct or otherwise remedy the violation prior to the administrative fine being imposed. Each person, firm, or corporation shall be guilty of a separate offense for each day and every day during any portion of which any violation is committed.

(4) Individual Violation that creates an immediate danger to the public health and safety. Where a violation is an Individual Violation that constitutes an immediate danger to the public health and safety, the property owner shall be provided notice to correct the violation within a maximum of two (2) hours from when the verbal or written notice was received. Depending upon the severity of the violation, if the violation is not corrected within the two-hour time period, the Authority shall have the option to initiate abatement procedures or impose the administrative citation provisions set forth herein.

C. Each administrative citation shall contain the following information:

(1) The date of the violation;

(2) The address or a definite description of the location where the violation occurred;

(3) The section or provision of the Authority Codes violated and a description of the violation;

(4) The amount of the fine for the violation;

(5) A description of the fine payment process, including a description of the time within which and the place to which the fine shall be paid;

(6) An order prohibiting the continuation or repeated occurrence of the violation described in the administrative citation;

(7) A description of the administrative citation review process, including the time within which the administrative citation may be contested and the place from which a request for a hearing form to contest the administrative citation may be obtained; and

(8) The name and signature of the citing Enforcement Officer.

D. Each provision of the Authority Codes that is violated constitutes a separate violation. Each day such a violation continues shall be regarded as a new and separate violation.

Section 4. Amount and Payment of Fines

A. Misdemeanor violations. For a violation of Authority Codes specified to be punishable as a misdemeanor, or which is punished as a misdemeanor under Section 1(A) of this Ordinance, for which no fine is specifically provided, the amount of the penalty shall be as set forth here. Upon conviction of a misdemeanor, or upon a plea of nolo contendere (commonly called "no contest"), the penalty shall be a base fine of not less than $500.00 and not more than one thousand dollars ($1,000.00), or by imprisonment in jail for a period of not more than six (6) months, or by both such base fine and imprisonment.

B. Infraction violations. Notwithstanding the foregoing, a misdemeanor violation may be cited, charged, and prosecuted as an infraction. Where so prosecuted, or where specified in Authority Codes that the violation of a certain section or sections shall be an infraction, then that shall be the type of offense and each such violation shall be punishable, except as otherwise provided herein, upon conviction or upon a plea of nolo contender (commonly called "no contest"), by:

(1) A base fine not exceeding one hundred dollars ($100.00) for a first violation;

(2) A base fine not exceeding five hundred dollars ($500.00) for a second violation of the same code provision within one (1) year from the date of the first violation;

(3) A base fine not exceeding one thousand dollars ($1,000.00) for a third or more violation(s) of the same code provision within one (1) year from the date of the first violation.

C. Administrative citation fines. Pursuant to the authority granted in Section 53069.4 of the California Government Code, the amount of administrative fines for Authority Code violations imposed pursuant to this Ordinance shall be assessed in the amounts specified by a Resolution of the Authority, or, where no amount is specified in a Resolution:

(1) A fine not exceeding one hundred dollars ($100.00) for a first violation;

(2) A fine not exceeding five hundred dollars ($500.00) for a second violation of the same code provision within one (1) year from the date of the first violation;

(3) A fine not exceeding one thousand dollars ($1,000.00) for a third or more violation(s) of the same code provision within one (1) year from the date of the first violation.

D. Payment of the Fine

(1) The fine shall be paid to the Authority within thirty (30) days from the date of the administrative citation. A late payment charge of twenty-five dollars ($25.00) shall be imposed upon failure to pay the amount due by the payment deadline. In addition, interest at the legal rate of ten percent (10%) shall be imposed on a monthly basis for any administrative citation amount remaining unpaid to the Authority.

(2) Any administrative citation fine paid pursuant to this Ordinance shall be refunded, if it is determined, after a hearing, that the person charged in the administrative citation was not responsible for the violation or that there was no violation as charged in the administrative citation.

(3) Payment of a fine under this Ordinance shall not excuse or discharge any continuation or repeated occurrence of the violation of Authority Codes that is subject of the administrative citation.

Section 5. Civil Actions

A. (a) Injunctive relief and abatement. At the request of any person authorized to enforce the Authority Codes, the Authority's Counsel or the County of San Bernardino District Attorney may commence proceedings for the abatement, removal, correction and enjoinment of any act or omission that constitutes or will constitute a violation of the Authority Codes, or any permit issued pursuant to the Authority Codes or related laws, or any condition(s) of approval for such permit granted pursuant thereto, and an order requiring the violator(s) to pay civil penalties and/or abatement costs. Where multiple violators are involved, they shall be jointly and severally liable for the civil penalties and/or abatement costs.

(b) Civil Remedies and Penalties. Any person, whether acting as principal, agent, employee, owner, lessor, lessee, tenant, occupant, operator, contractor, or otherwise, who violates any provision of the Authority Codes, or any permit issued pursuant to the Authority Codes or related laws, or any condition(s) of approval for such permit granted pursuant thereto, shall be liable for a civil penalty not to exceed one thousand dollars ($1,000.00) per violation for each day or any portion thereof, that the violation continues to exist. In determining the amount of civil penalty to be imposed, both as to the daily rate and the subsequent total amount for any given violation, the court shall consider all relevant circumstances, including, but not limited to, the extent of the harm caused by the conduct constituting the violation; the nature and persistence of such conduct; the length of time over which the

conduct occurred or was repeated; the assets, liabilities, and net worth of the violator; whether the violator is a corporate entity or an individual; and any corrective action taken by the violator.

(c) Attorney's fees. In any civil action, administrative proceeding (excluding administrative citations issued pursuant to Section 4 of this Ordinance), or special proceeding to abate a public nuisance, whether by seeking injunctive relief and/or an abatement order, or other order, attorney's fees may be recovered by the prevailing party and shall not exceed the amount of reasonable attorney's fees incurred by the Authority in that action or proceeding.

Section 6. Administrative Citations and Penalties – Dangerous Fireworks, and Unlawful Use of Safe & Sane Fireworks

A. This section governs, and applies only to, the imposition and enforcement of administrative penalties related to the storage, possession, handling, sale, use, transportation, or public display of those fireworks classified as "Dangerous Fireworks," and the unlawful use of Safe and Sane Fireworks.

B. For the purposes of this section, the term "Dangerous Fireworks" shall be defined pursuant to California Health and Safety Code section 12500, et seq. and shall also include "Safe and Sane" fireworks as defined in California Health and Safety Code section 12529, which have been modified to act in the same manner as Dangerous Fireworks.

C. The penalties enumerated in this section shall not apply to a local, state, or federal law enforcement agency or Authority personnel acting within the scope of their official duties or to a pyrotechnic licensee when operating pursuant to that license.

D. The imposition of administrative penalties related to "Dangerous Fireworks" under this section shall be limited to persons who store, possess, handle, sell, use, transport, or publicly display 25 pounds or less (gross weight including packaging) of such Dangerous Fireworks. Any persons who store, possess, handle, sell, use, transport, or publicly display over 25 pounds (gross weight including packaging) of such Dangerous Fireworks may be subject to criminal action.

E. Administrative penalties collected pursuant to this section related to "Dangerous Fireworks" shall not be subject to California Health and Safety Code section 12706, which section provides that certain fines collected by a court of the state be deposited with, and disbursed by, the County Treasurer. However, the Authority shall provide cost reimbursement to the State Fire Marshal pursuant to regulations to be adopted by the State Fire Marshal addressing the State Fire Marshal's cost for the transportation and disposal of "Dangerous Fireworks" seized by the Authority, which costs will be part of any administrative penalty imposed. Unless and until said regulations have been adopted by the state of California, the Authority shall hold in trust two hundred fifty dollars ($250) of any penalty collected to cover the cost reimbursement to the State Fire Marshal for said cost of transportation and disposal of the "Dangerous Fireworks."

F. Notwithstanding the penalties defined in this section, administrative citations issued pursuant to this section shall comply with all the requirements of this Ordinance.

G. Each person who violates any provision of this Ordinance relating to the storage, possession, handling, sale, use, transportation, or public display of Dangerous Fireworks shall be subject to the imposition and payment of an increased administrative penalty as provided, below:

Administrative Penalties for Dangerous Fireworks			
Number of Occurrences in a 1-Year Period	Amount of Administrative Penalty	Late Charge	Total Amount of Penalty Plus Late Charge
First	$1,250.00	$125.00	$1,375.00
Second	$2,250.00	$225.00	$2,475.00
Three or More	$3,250.00	$325.00	$3,575.00

H. Each person who violates any provision of this Ordinance relating to the unlawful storage, possession, handling, sale, use, transportation, or public display of unmodified Safe and Sane fireworks shall be subject to the imposition and payment of an increased administrative penalty as provided in the table below:

Administrative Penalties for Safe and Sane Fireworks			
Number of Occurrences in a 1-Year Period	Amount of Administrative Penalty	Late Charge	Total Amount of Penalty Plus Late Charge
First	$150.00	$15.00	$165.00
Second	$250.00	$25.00	$275.00
Three or More	$350.00	$35.00	$385.00

I. The issuance of an administrative citation pursuant to this section shall not preclude the Enforcement Officer or any other person authorized to issue an administrative citation pursuant to this section from seizing any Dangerous Fireworks or unlawfully used Safe and Sane fireworks pursuant to this Ordinance and California Health and Safety Code section 12721.

J. Interest in the amount set forth in Section 4 shall be imposed on a monthly basis for any administrative citation amount remaining unpaid to the Authority under this section.

Section 7. Appeal Hearing Upon Request

A. Any recipient of an administrative citation may contest that there was a violation of the Authority Codes, or that he or she is the responsible party, by completing a

request for hearing form and returning it to the Authority within fifteen (15) calendar days from the date of the administrative citation, together with an advance deposit of the fine or notice that a request for an advance deposit hardship waiver has been filed.

B. A request for a hearing form may be obtained from the place specified on the administrative citation.

C. Any appeal not timely filed shall be rejected. Failure of any person to file an appeal in accordance with the provisions of this Section 7 shall constitute a waiver of that person's rights to administrative determination of the merits of the citation and the amount of the fine.

D. A request for a hearing before the Appeals Board shall be deemed filed upon the Secretary of the Board's receipt of payment of an appeal fee, which may be determined and set by the Authority to cover the cost of preparing the record for the appeal and for any other costs or expenses of conducting the hearing. Unless otherwise specified by resolution, the appeal fee is $250. After all appeals have been exhausted, the Authority will refund any portion of the appeal fee(s) which are not used. A summary of the costs will be compiled and sent to the appellant and paid within thirty (30) days of exhaustion of all appeals.

Section 8. Advance Deposit Hardship Waiver

A. Any person who intends to request a hearing to contest that there was a violation of the Authority Codes, or that he or she is the Responsible Person, and who is financially unable to make the advance deposit of the fine as required in this Ordinance may file a request for an advance deposit hardship waiver at the time of filing the hearing request.

B. The requirement of depositing the full amount of the fine as described in Sections 7(A) and 7(D) shall be stayed until the Director of Finance makes a determination on the advance deposit hardship waiver request.

C. The Director of Finance may waive the requirement of an advance deposit only if the requesting party submits to the Director of Finance a sworn declaration, together with any supporting documents or materials, demonstrating to the satisfaction of the Director of Finance the person's actual financial inability to deposit with the Authority the full amount of the fine in advance of the hearing.

D. The Director of Finance shall issue and mail a written decision to the person who applied for the advance deposit hardship waiver. The written decision shall list the reasons for his or her decision. The written decision of the Director of Finance shall be final.

E. If the Director of Finance determines not to grant the advance deposit hardship waiver, the person shall remit the deposit to the Authority within ten (10) calendar days of the date of the written decision.

Section 9. Dismissal of Citation

At any time before the hearing, if the Enforcement Officer determines that there was no violation as charged in the administrative citation or that the citation should be dismissed in the interest of justice, the Enforcement Officer may dismiss the administrative citation, cancel the requested hearing, and refund any advance deposit paid pursuant to this Ordinance.

Section 10. Appeals Board

The Appeals Board established in Section 109.1 of the Authority's Fire Code (as may be amended or replaced from time to time) shall serve as the appropriate body for the administrative citation hearing. In order to hear and decide appeals of orders, decisions, or determinations made by the Enforcement Officer relative to the application and interpretation of the Authority Codes or this Ordinance, a committee of the Big Bear Fire Authority Board of Directors shall serve as an Appeals Board. As provided in Section 109.1 of the Authority's Fire Code, the Authority may alternatively contract with or otherwise designate an outside hearing officer to serve as the Appeals Board. Certain appeals involving enforcement by the County may also be heard by the County Fire Protection District Fire Chief/Fire Warden, the Fire Chief's/Fire Warden's designee, or other hearing officer so designated by the County and/or the County Fire Protection District in accordance with their appeal procedures.

Section 11. Hearing Procedure

A. No hearing to contest an administrative citation or other administrative decision governed by this Ordinance before the Appeals Board shall be held unless and until a timely written request for a hearing has been submitted in accordance with Section 7, and the fine has either been deposited in advance or waived in accordance with Section 8.

B. A hearing before the Appeals Board shall be set for a date that is not less than ten (10) days and not more than thirty (30) days from the date that the request for hearing is filed in accordance with the provisions of this Ordinance. The person requesting the hearing and the Enforcement Officer involved shall be notified of the time and place for the hearing at least ten (10) days prior to the date of the hearing.

C. The Appeals Board shall only consider evidence that is relevant to whether the violation(s) occurred or administrative citation should be upheld, or whether the

responsible person has caused or maintained the violation of the Authority Codes on the date(s) specified in the administrative citation.

D. The Responsible Person contesting the administrative citation shall be given the opportunity to testify and present witnesses and evidence concerning the administrative citation.

E. The failure of any recipient of an administrative citation to appear at the administrative citation hearing shall constitute a forfeiture of the fine and a failure to exhaust their administrative remedies.

F. The administrative citation and any additional documents submitted by the Enforcement Officer shall constitute prima facie evidence of the respective facts contained in those documents.

G. If the Enforcement Officer submits any additional documents concerning the administrative citation to the Appeals Board for consideration at the hearing, then a copy of the additional documents shall also be mailed to the person requesting the hearing prior to the date of the hearing.

H. No other discovery is permitted. Formal rules of evidence shall not apply.

I. The Appeals Board may continue the hearing and request additional information from the Enforcement Officer or the recipient of the administrative citation prior to issuing a written decision.

Section 12. Appeals Board's Decision

A. After considering all of the testimony and evidence submitted at the hearing, the Appeals Board shall issue a written decision within fifteen (15) days after conclusion of the hearing to uphold or dismiss the administrative citation and shall list in the decision the reasons for that decision.

B. If the Appeals Board determines that the administrative citation should be upheld, then the fine amount on deposit with the Authority shall be retained by the Authority.

C. If the Appeals Board determines that the administrative citation should be upheld and the fine has not been deposited pursuant to an advance deposit hardship waiver, the Appeals Board shall set forth in the decision a payment schedule for the fine.

D. If the Appeals Board determines that the administrative citation should be dismissed and the fine was deposited with the Authority, the Authority shall refund the amount of the deposited fine in accordance with standard operating procedures established by the Authority.

E. The recipient of the administrative citation shall be mailed a copy of the Appeals Board's written decision. The decision of the Appeals Board shall be final.

Section 13. Failure to Pay Fines

A. The Authority may collect any past due administrative citation fines, administrative fees, or late payment charges by use of all available legal means, including, but not limited to, personal collection from the responsible parties and special assessment against the parcel of real property containing the violations cited. The Authority also may recover all costs, expenses, and fees, including attorneys' fees, associated with the assessment, enforcement, processing, and collection of the fines associated with the administrative citation in accordance with the provisions of this Ordinance.

B. The failure of any person to pay a fine assessed by the administrative citation within the time specified on the administrative citation constitutes a debt to the Authority. To enforce the debt, the Authority may file a civil action, impose a special assessment as set forth below, or pursue any other legal remedy to collect such debt, including reasonable costs of collection and attorney's fees.

C. The Authority may impose a special assessment or lien against the property that is the subject of an administrative citation if the citation has been issued to the property owner. If the administrative citation concerns property now owned by the Responsible Person, the Authority may impose a special assessment or lien against the property owned by the Responsible Person.

D. For a special assessment, a copy of the assessment shall be turned over to the San Bernardino County tax collector. At that point, it will be the duty of the tax collector to add the amounts of the respective assessments to the next regular property tax bills levied against the lots and parcels of land for municipal purposes. Those amounts shall be collected at the same time and in the same manner as ordinary property taxes are collected, and shall be subject to the same penalties and procedures under foreclosure and sale as provided for with ordinary municipal taxes.

E. In the alternative or in addition, the Fire Chief may record a notice of lien in the San Bernardino County Recorder's Office for the amount of the lien assessed. After recordation, the lien may be foreclosed by judicial or other sale in the manner and means provided by law.

Section 14. Right to Judicial Review

Any person aggrieved by an administrative decision of the Appeals Board on an administrative citation under this Ordinance may obtain review of the administrative decision by filing a petition for review with the San Bernardino County Superior Court in

accordance with the timelines and provisions set forth in California Government Code Section 53069.4.

Section 15. Notices

A. The administrative citation and all notices to be given by this Ordinance shall be provided to the Responsible Person in accordance with the provisions of this section. Unless different provisions herein are otherwise specifically made, such administrative citation or notice may be given by either personal delivery thereof to the person to be notified or by deposit in the United States mail, in a sealed envelope, postage prepaid, addressed to such person to be notified, at his or her last known business or residence address as the same appears in the public records of the city or county where the property is located or other records pertaining to the matter to which such notice is directed. Notice by mail shall be deemed to have been completed at the time of deposit with the U.S. Postal Service.

B. Failure to receive any notice specified in this part does not affect the validity of proceedings conducted hereunder.

Section 16. Civil or Criminal Actions Not Affected

Any administrative citation issued pursuant to this Ordinance shall not prejudice or adversely affect any other action, civil or criminal, that may be brought to abate the public nuisance or violation or to seek compensation for damages suffered. A civil or criminal action may be brought concurrently with any other process regarding the same public nuisance or violation.

Section 17. Cost Recovery - Pursuant to California Health and Safety Code sections 11374.5(b)(1), 13009 et seq., 13916(a), 25259.4, 25514, 25515(a), 25540(a), 25541(a), California Government Code sections 53150, 53151, 53152, 53159(a) & (b), California Vehicle Code section 23112.7, and all other provisions of law, all costs incurred by the Authority for the inspection and enforcement of any provision of the Authority Codes, the investigation of any fire, explosion or other hazardous condition, the suppression of fire, the response to a traffic collision or accident, the containment and/or mitigation of a hazardous materials release, and any rescue or rendering of medical or physical aid or assistance, may be charged to any responsible party, any person who violates the Authority Codes or any person who, due to a negligent or unlawful act or omission, is responsible for or requires or causes the emergency response of this Authority pursuant to a schedule of fees adopted by the Authority. Any expense incurred by this Authority for such an emergency response shall constitute a debt of such person and shall be collectible by the Authority in the same manner as in the case of an obligation under contract, express or implied.

Section 18. Severability - If any section, subsection, clause or phrase in this Ordinance is for any reason held invalid, the validity of the remainder of this Ordinance shall not be affected thereby. The Board hereby declares that it would have passed this Ordinance and each section,

subsection, sentence, clause, or phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses or phrases or the application thereof be held invalid.

Section 19. Date Of Effect - This Ordinance shall take effect and be in force thirty (30) days after its final passage at a public meeting as required by law. First read at a regular meeting of the Board of Directors of the Authority, held on the ____day of _____, 2021, and finally adopted in the manner required by law at the meeting on the ____ day of _____, 2021, by the following vote:

PASSED, APPROVED, AND ADOPTED this ___ day of _____, 2021.

AYES:
NOES:
ABSENT:
ABSTAIN:

_____ _____

Date

Randall Putz
Chairman
Big Bear Fire Authority

ATTEST:

_____
Chardelle Smith
Board Secretary
Big Bear Fire Authority

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF BIG BEAR LAKE)

I, Chardelle Smith, Secretary of the Big Bear Fire Authority Board, do hereby certify that the whole number of members of the said Board is ten; that the foregoing ordinance, being Ordinance No. BBFA21-002 was duly passed and adopted by the said Board, approved and signed by the Chair of said Board, and attested by the Secretary of said Board, all at a meeting of the said Board held on the ____ day of _____ 2021, and that the same was so passed and adopted by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Witness my hand and the official seal of said Authority this ____ day of _____, 2021.

_____
Chardelle Smith
Board Secretary
Big Bear Fire Authority

Exhibit "A"

Scope of work

Arrow XT Mid Mount Tower Bid Spec (9/9/21)

South Coast Fire Equipment is pleased to submit a proposal to **BIG BEAR FIRE DEPARTMENT** for a **Pierce® 100' Heavy Duty Aerial Tower** per your request for quotation. The following paragraphs will describe in detail the apparatus, construction methods, and equipment proposed. This proposal will indicate size, type, model and make of components parts and equipment, providing proof of compliance with each and every item (except where noted) in the departments advertised specifications.

PIERCE MANUFACTURING was founded in 1913. Since then we have been building bodies with one philosophy, "BUILD THE FINEST". Our skilled craftsmen take pride in their work which is reflected in the final product. We have been building fire apparatus since the early "forties" giving Pierce Manufacturing over 75 years of experience in the fire apparatus market. Pierce Manufacturing has built and put into service more than 62,500 apparatus, including more than 33,900 on Pierce custom chassis designed and built specifically for fire and emergency applications. Our Appleton, Wisconsin facility has over 870,000 total square feet of floor space situated on approximately 105 acres of land. Our Bradenton, Florida facility has 300,000 square feet of floor space situated on approximately 38 acres of land.

Our beliefs in high ethical standards are carried through in all of our commitments and to everyone with whom we do business. Honesty, Integrity, Accountability and Citizenship are global tenets by which we all live and work. Consequently, we neither engage in, nor have we ever been convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

Pierce has only one brand of fire apparatus "Pierce", ensuring you are receiving top of the line product that meets your specification.

In accordance with the current edition of NFPA 1901 standards, this proposal will specify whether the fire department, manufacturer, or apparatus dealership will provide required loose equipment.

Images and illustrative material in this proposal are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.

GENERAL DESIGN AND CONSTRUCTION

To control quality, ensure compatibility, and provide a single source for service and warranty, the custom cab, chassis, pump module and body will be entirely designed, assembled/welded and painted in Pierce owned manufacturing facilities. This includes, but not limited to the cab weldment, the pumphouse module assembly, the chassis assembly, the body and the electrical system.

QUALITY AND WORKMANSHIP

Pierce has set the pace for quality and workmanship in the fire apparatus field. Our tradition of building the highest quality units with craftsmen second to none has been the rule right from the beginning and we demonstrate that ongoing commitment by: Ensuring all steel welding follows American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding follows American Welding society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding follows American welding Society B2.1-2000 requirements for structural welding of sheet metal. Our flux core arc welding uses alloy rods, type 7000 and is performed to American Welding Society standards A5.20-E70T1. Furthermore, all employees classified as welders are tested and certified to meet the American welding Society codes upon hire and every three (3) years thereafter. Pierce also employs and American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

Pierce Manufacturing operates a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that are established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance is included with this proposal.

In addition to the Quality Management system, we also employ a Quality Achievement Supplier program to ensure the vendors and suppliers that we utilize meet the high standards we demand. That is just part of our overall "Quality at the Source" program at Pierce.

To demonstrate the quality of our products and services, a list of at least two (2) fire departments/municipalities that have purchased vehicles for a second time is provided.

DELIVERY

The apparatus will be delivered under its own power to ensure proper break-in of all components while the apparatus is still under warranty. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in proper operation, care and maintenance of the equipment delivered.

MANUAL AND SERVICE INFORMATION

At time of delivery, complete operation and maintenance manuals covering the apparatus will be provided. A permanent plate will be mounted in the driver's compartment specifying the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

At the time of delivery Pierce will also provide one (1) 39-minute, professionally produced apparatus safety video, in DVD format. This video will address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus, including the following: vehicle pre-trip inspection, chassis operation, pump operation, aerial operation, and safety during maintenance.

PERFORMANCE TESTS

A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise. The apparatus when fully loaded will not have less than 25 percent nor more than 50 percent on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. The apparatus will meet NFPA 1901 acceleration and braking requirements.

SERVICE AND WARRANTY SUPPORT

Pierce dealership support will be provided by South Coast Emergency Vehicle Service by operating a Pierce authorized service center. The service center will have factory-trained mechanics on staff versed in Pierce fire apparatus. The service facility will be located within one hundred (100) miles of the fire department.

In addition to the dealership, Pierce has service facilities located in both, Weyauwega, Wisconsin and Bradenton, Florida. Pierce also maintains a dedicated parts facility of over 100,000 square feet in Appleton, Wisconsin. The parts facility stocks in excess of $5,000,000 in parts dedicated to service and replacement parts. The parts facility employs a staff dedicated solely for the distribution and shipment of service and replacement parts.

Service parts for the apparatus being proposed can be found via Pierceparts.com which, is an interactive online tool that delivers information regarding your specific apparatus as well as the opportunity to register for training classes.

As a Pierce customer you have the ability to view the complete bill of materials for your specific apparatus, including assembly drawings, piece part drawings, and beneficial parts notations. You will also have the ability to search the complete Pierce item master through a parts search function which offers all Pierce SKU's and descriptions offered on all Pierce apparatus. Published component catalogs, which include proprietary systems along with an extensive operators manual library is available for easy reference.

Pierce Manufacturing maintains a dedicated service and warranty staff of over 35 personnel, dedicated to customer support, which also maintains a 24 hour 7 day a week toll free hot line, four (4) on staff EVTs, and offers hands-on repair and maintenance training classes multiple times a year.

LIABILITY

The successful bidder will defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

INSURANCE PROVIDED BY BIDDER

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder will, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Each Occurrence$1,000,000

Products/Completed Operations Aggregate$1,000,000

Personal and Advertising Injury$1,000,000

General Aggregate$2,000,000

Coverage will be written on a Commercial General Liability form. The policy will be written on an occurrence form and will include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy will include Owner as an additional insured when required by written contract.

COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

The successful bidder will, during the performance of the contract, keep in force at least the following minimum limits of commercial automobile liability insurance and coverage will be written on a Commercial Automobile liability form:

Each Accident Combined Single Limit:$1,000,000

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder will, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate:$3,000,000

Each Occurrence:$3,000,000

The umbrella policy will be written on an occurrence basis and at a minimum provide excess to the bidder's General Liability and Automobile Liability policies.

The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.

Coverage will be provided by a carrier(s) rated A- or better by A.M. Best.

All policies will provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance will provide the following cancellation clause: Should any of the above described

polices be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate will show the purchaser as certificate holder.

INSURANCE PROVIDED BY MANUFACTURER

PRODUCT LIABILITY INSURANCE

The manufacturer will, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of Product Liability insurance:

Each Occurrence$1,000,000

Products/Completed Operations Aggregate$1,000,000

Coverage will be written on a Commercial General Liability form. The policy will be written on an occurrence form. The manufacturer's policy will include the owner as additional insured when required by written contract between the Owner and a Pierce authorized dealer.

UMBRELLA/EXCESS LIABILITY INSURANCE

The manufacturer will, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Each Occurrence:$25,000,000

Aggregate:$25,000,000

The umbrella policy will be written on an occurrence basis and provide excess to the manufacturer's General Liability/Products policies.

The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.

Coverage will be provided by a carrier(s) rated A- or better by A.M. Best.

All policies will provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance will provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

Manufacturer agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate will show the purchaser as the certificate holder.

SINGLE SOURCE MANUFACTURER

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

NFPA 2016 STANDARDS

This unit will comply with the NFPA standards effective January 1, 2016, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces will be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points will be identified on the customer approval print and are shown as approximate. Actual location(s) will be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

NFPA COMPLIANCY

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

VEHICLE INSPECTION PROGRAM CERTIFICATION

To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, will be third-party, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable

standards in the current edition of NFPA 1901. The certification will include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

INSPECTION CERTIFICATE

A third party inspection certificate for the aerial device will be furnished upon delivery of the aerial device. The certificate will be Underwriters Laboratories Inc. Type 1 and will indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections will be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests will be conducted:

- Magnetic particle inspection will be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets will be placed on each side of the weld while iron powder is placed on the weld itself. The powder will detect any crack that may exist. This test will conform to ASTM E709 and be performed prior to assembly of the aerial device.
- A liquid penetrant test will be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test will conform to ASTM E165 and be performed prior to assembly of the aerial device.
- Ultrasonic inspection will conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests will be performed on all aerials. These tests will determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

PUMP TEST

The pump will be tested, approved and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details will be forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, the generator will be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results will be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, Pierce Manufacturing will draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

INSPECTION TRIP(S)

The bidder will provide two (2) factory inspection trips for Total of six (6) customer representatives. The inspection trips will be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals will be the responsibility of the bidder.

AFTERMARKET SUPPORT WEBSITE

Pierceparts.com will provide Pierce authorized dealer access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool will provide the Pierce authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips.

Pierceparts.com is also accessible to the end user through the guest login. Limited access is available and vehicle specific parts information accessible by entering a specific VIN number. All end users should see their local authorized Pierce dealer for additional support and service.

The website will consist of the following screens at the dealer level:

My Fleet Screen

The My Fleet screen will provide access to truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc.

Parts Screens

The Parts screens will provide parts look-up capability of Pierce Manufacturing sourced items, with the aid of digital photographs, part drawings and assembly drawings. The parts search application will permit the searching of parts by item description or function group (major system category). The parts application will provide the ability to submit electronically a parts order, parts quote, or parts return request directly to Pierce Manufacturing for processing.

Warranty Screen

The Warranty screens will provide dealers the ability to submit electronically warranty claims directly to Pierce Manufacturing for reimbursement.

My Reports Screens

The My Reports screens will provide access to multiple dealer reports to allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts.

Technical Support Screens

The Technical Support screens will provide access to all currently published Operation and Maintenance and Service Publications. Access to Pierce Manufacturing Service Bulletins and Work Instructions, containing information on current service topics and recommendations will be provided.

Training

The Training screens will provide access to upcoming training classes offered by Pierce Manufacturing along with interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components will be provided. Access to training manuals used in Pierce Manufacturing training classes will be provided.

About Pierce

Access to customer service articles, corporate news, quarterly newsletters, and key contacts within the Customer Service Department will be provided. The current Customer Service Policy and Procedure Manual, detailing the operation of the Customer Service group will also be accessible.

BID BOND

A bid bond as security for the bid in the form of a 10% bid bond will be provided with the proposal. This bid bond will be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond will be issued by an authorized representative of the Surety Company and will be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond will include language which assures that the bidder/principal will give a bond or bonds, as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle will apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle will not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision will prevail.

PERFORMANCE BOND, 1 YEAR

The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Basic One (1) Year Limited Warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 100 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

APPROVAL DRAWING

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

ARROW XT CHASSIS

The Pierce Arrow XT™ is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and manufactured for heavy duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis will be the manufacturer's heavy duty line tilt cab.

WHEELBASE

The wheelbase of the vehicle will be 268.00.

GVW RATING

The gross vehicle weight rating will be 76,600.

FRAME

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

FRAME REINFORCEMENT

In addition, a full-length mainframe internal "C" liner will be provided. It will be heat-treated steel measuring 12.50" x 3.00" x 0.25". Each liner will have a section modulus of 13.58 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center will be 4,391,869 in-lb.

The frame liner will be mounted inside of the chassis frame rail and extend the full length of the frame.

FRONT NON DRIVE AXLE

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 24,000 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load will be zero degrees for optimum tire life.

The ball joint bearing will be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a third party certified turning angle of 40 degrees. Front discharge, front suction, or aluminum wheels will not infringe on this cramp angle.

FRONT SUSPENSION

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 24,000 lb.

The independent suspension system has been designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have a torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

FRONT SHOCK ABSORBERS

KONI heavy-duty telescoping shock absorbers will be provided on the front suspension.

FRONT OIL SEALS

Oil seals with viewing window will be provided on the front axle.

FRONT TIRES

Front tires will be Goodyear 425/65R22.50 radials, 20 ply Armor MAX, rated for 24,400 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on 22.50" x 12.25" steel disc type wheels with a ten (10)-stud, 11.25" bolt circle.

REAR AXLE

The rear axle will be a tandem axle assembly, of the Oshkosh TAK-4® T3, Tight Turning Technology, independent suspension design, with the ability to support a mechanical rear axle steering system. Tandem rear axles will have a ground rating of 52,640 lb.

The rear axles will be designed for specific use of the independent suspension.

The rear independent suspension driving axles will be equipped with a carrier reduction of 1.69 to 1.00 with a planetary wheel end reduction of 3.55 to 1.00. Driving torque will be transmitted from the center differential to the planetary wheel drive by means of a half shaft.

Oil fills and level checks will be required at the center differential and the planet wheel end locations.

An inter-axle differential, which divides torque evenly between axles, will be provided with an indicator light mounted on the cab instrument panel.

REAR AXLE STEERING

The tandem rear axle assembly will include a mechanical rear steering system. The mechanical rear steering system will be applied to the both rear axles.

The steering geometry will be designed to minimize tire scrub of the rear tandem axle tires while reducing the overall turning diameter of the apparatus.

The mechanical rear steering system will not use electronic controls and will not have a means to be disengaged. Coordinated steering is the only steering mode supported by the mechanical steering system.

Rear steering system is actuated by a mechanical means of connecting the front master/slave steering gear system to a rear axle master/slave steering gear system.

TOP SPEED OF VEHICLE

A rear axle ratio will be furnished to allow the vehicle to reach a top speed of 60 mph.

REAR SUSPENSION

The rear suspension will be an Oshkosh TAK-4® independent type with a minimum ground rating of 52,640 lbs.

The independent suspension will be configured with upper and lower control arms with a spring seat for a coil spring mounted to the lower control arm. The spring tower will be integrated into the suspension frame mount. Each control arm has elastomeric bushings at the inner pivot locations with a ball joint bearing at the outer pivot location. All suspension pivot joints will be of a maintenance free design.

The rear independent suspension will be provided with steering toe links providing tow adjustments and maintaining wheel control throughout the range of wheel travel.

The independent suspension will be designed to provide maximum ride quality when traveling at highway speeds over improved roads or a moderate speeds over secondary road surfaces with minimal transfer of shock and vibration to the apparatus.

Each independent suspension will utilize a coil type of spring. The design will allow for removal of the spring without the use of any spring compression.

The rear suspension will provide a minimum wheel travel of 10.00", 6.00" jounce and 4.00" of rebound.

REAR OIL SEALS

Oil seals will be provided on the rear axle(s).

REAR AXLE LOCKING CONTROLS

Shifting of the tandem axle Interlock, Front and Rear Differential will be controlled by a rocker style switch. Red indicators will be provided when activated. The switches will be held for (3) three seconds before they will engage. The switches will be interlocked to the engine running

DRIVER CONTROL DIFFERENTIAL LOCK (DCDL)

Both rear tandem axles will be equipped with driver controlled differential locks (DCDL). The control will be located within easy reach of the driver.

REAR TIRES

Rear tires will be four (4) Goodyear radials 445/65R22.50, 20 ply all-position G296 MSA tread, rated for 52,640 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on 22.50" x 13.00" steel disc type wheels with a ten (10) stud,11.25" bolt circle.

TIRE BALANCE

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

TIRE PRESSURE MANAGEMENT

There will be a RealWheels LED AirSecure™ tire alert pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of 10 tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start to flash.

FRONT HUB COVERS

Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

CHROME LUG NUT COVERS

Chrome lug nut covers will be supplied on front and rear wheels.

MUD FLAPS

Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

WHEEL CHOCKS

There will be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks, with easy-grip handle provided.

Wheel Chock Brackets

There will be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets will be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets will be mounted rearward of the left side rear tire.

ANTI-LOCK BRAKE SYSTEM

The vehicle will be equipped with a Wabco 4S4M, anti-lock braking system. The ABS will provide a four (4) channel anti-lock braking control on both the front and rear wheels (rear tandem wheels). A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any particular wheel begins to lockup, a signal will be sent to the control unit. This control unit then will reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

BRAKES

The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Bendix®, Model ES1657D, 16.50" x 7.00" cam operated with automatic slack adjusters.

BRAKE SYSTEM AIR COMPRESSOR

The air compressor will be a Cummins/WABCO with 18.7 cubic feet per minute output.

BRAKE SYSTEM

The brake system will include:

- Bendix dual brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system capacity of 6,653 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, will be provided with an automatic spring brake application at 40 psi
- A pressure protection valve will be provided to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa).
- Quarter turn drain valves on each air tank

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

BRAKE SYSTEM AIR DRYER

The air dryer will be a Bendix AD-9, with heater and coalescing filter.

BRAKE LINES

Color-coded nylon brake lines will be provided. The lines will be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

AIR INLET

One (1) air inlet with 3D series male coupling will be provided. It will allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet will be located forward in the driver side lower step well of cab. A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female fitting will also be provided with the loose equipment.

ALL WHEEL LOCK-UP

An additional all wheel lock-up system will be installed which applies air to the front brakes only. The standard spring brake control valve system will be used for the rear.

AIR COMPRESSOR - BRAKE SYSTEM MAINTENANCE

There will be a Blue Sea Model 7921, vertical mount, 12-volt DC air compressor provided in top of front compartment Driver's side. The compressor will maintain the air pressure in the chassis air brake system. while the vehicle is not in use. A pressure switch will sense when the system pressure drops and automatically start the compressor, which then will run until pressure is restored.

ENGINE

The chassis will be powered by an electronically controlled engine as described below:

Make:	Cummins®
Model:	X15
Power:	605 hp at 1800 rpm
Torque:	1850 lb-ft at 1000 rpm
Governed Speed:	2100 rpm
Emissions Level:	EPA 2021
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	912 cubic inches (14.9L)
Starter:	Delco 39MT™
Fuel Filters:	Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter.

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle

sub systems. The system will monitor vehicle systems, engine and after treatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

REMOTE MOUNTED ENGINE FILTERS

The engine fuel and oil filters will be remote mounted for ease of maintenance.

HIGH IDLE

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided, adjacent to the switch. The light will illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

ENGINE BRAKE

A Jacobs® engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver will be able to turn the engine brake system on/off and have a high, medium and low setting.

The engine brake will activate when the system is on and the throttle is released.

The high setting of the brake application will activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine.

The engine brake will be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system will automatically disengage the auxiliary braking device, when required.

CLUTCH FAN

A Horton® fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and fully engaged in "Pump" position.

ENGINE AIR INTAKE

The air intake with an ember separator will be mounted high on the passenger side of the cab, to the front of the crew cab door. The ember separator is designed to prevent road dirt and recirculating hot air from entering the engine. The ember separator will be easily accessible through a hinged stainless steel grille, with one (1) flush quarter turn latch.

EXHAUST SYSTEM

The exhaust system will include a Single Module™ aftertreatment device to meet current EPA standards. The exhaust system will be stainless steel from the turbo to the inlet of the aftertreatment device, and will be 5.00" in diameter. An insulation wrap will be provided on all exhaust pipes between

the turbo and aftertreatment device to minimize the heat loss to the aftertreatment device. The exhaust will terminate horizontally ahead of the right side rear wheels. A tailpipe diffuser will be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

RADIATOR

The radiator and the complete cooling system will meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core will be constructed using long life aluminum alloy. The core will be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes will be brazed to aluminum headers. The radiator core will have a minimum frontal area of approximately 1,352 square inches. Supply tank made of glass-reinforced nylon and a return tank of cast aluminum alloy will be crimped on to the core assembly using header tabs and a compression gasket to complete the radiator core assembly. The radiator will be compatible with commercial antifreeze solutions.

There will be a full steel frame around the entire radiator core assembly. The radiator core assembly will be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator will be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly will be isolated from the chassis frame rails with rubber isolators.

The radiator assembly will include an integral de-aeration tank permanently mounted to the top of the radiator framework, with a readily accessible remote-mounted overflow tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan will draw in fresh, cool air through the radiator. Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Gates, or Goodyear, rubber hose will be used for all engine coolant lines installed by Pierce Manufacturing.

Hose clamps will be stainless steel constant torque type to prevent coolant leakage. They will expand and contract according to coolant system temperature thereby keeping a constant clamping pressure on the hose.

FUEL TANK

A 75 gallon fuel tank will be provided and mounted at rear of chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps. (no exception).

A .75" drain plug will be provided in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body. The door will be marked "Ultra Low Sulfur - Diesel Fuel Only." The door will be finished painted job color

A .50" diameter vent will be provided running from top of tank to just below fuel fill inlet.

The tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

DIESEL EXHAUST FLUID TANK

A 4.5 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body forward of the rear axle.

A 0.50" drain plug will be provided in a low point of the tank for drainage.

A fill inlet will be provided and marked "Diesel Exhaust Fluid Only". The fill inlet will be located below the air bottle storage behind a common door on the driver side of the vehicle.

The tank will meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

FUEL PRIMING PUMP

A Cummins automatic electronic fuel priming pump will be integrated as part of the engine.

FUEL COOLER

An air to fuel cooler will be installed in the engine fuel return line.

FUEL SEPARATOR

The engine will be equipped with a Racor in-line spin-on fuel and water separator in addition to the engine fuel filters.

TRANSMISSION

An Allison 5th generation, model EVS 4500P, electronic, torque converting, automatic transmission will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer will be installed on the cab instrument panel.

TRANSMISSION SHIFTER

A six (6)-speed push button shift module with five (5) + one (1) "Mode" selector will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be 1st - 4.70 to 1.00, 2nd - 2.21 to 1.00, 3rd - 1.53 to 1.00, 4th - 1.00 to 1.00, 5th - 0.76 to 1.00, 6th - 0.67 to 1.00, R - 5.55 to 1.00.

TRANSMISSION COOLER

An externally mounted Modine bar plate transmission oil cooler will be provided using engine coolant to control the transmission oil temperature. The internal bar plates will be constructed of stainless steel. The cooler's housing will be constructed of 1020 steel, coated to protect from corrosion. The cooler will be tagged with information including OEM part number, vendor serial number and date / lot code.

SYNTHETIC FLUID ONLY TAG

A tag will be located at the transmission fill point labeled "Synthetic Fluid Only".

DOWNSHIFT MODE (W/ENGINE BRAKE)

The transmission will be provided with an aggressive downshift mode.

This will provide earlier transmission downshifts to 2nd gear from 6th gear, resulting in improved engine braking performance.

TRANSMISSION PROGRAM

The transmission will shift to neutral when parking brake is set.

TRANSMISSION FLUID

The transmission will be provided with TranSynd heavy duty synthetic transmission fluid.

DRIVELINE

Drivelines will be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft where the driveline design requires it. The slip joint will be coated with Glidecoat® or equivalent.

STEERING

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

STEERING WHEEL

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.

LOGO AND CUSTOMER DESIGNATION ON DASH

The dash panel will have an emblem containing the Pierce logo and customer name. The emblem will have three (3) rows of text for the customer's department name. There will be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text will be: BIG

The second row of text will be: BEAR

The third row of text will be: FIRE DEPT.

BUMPER

A One (1) piece aluminum bumper minimum of 10.00" high and 45 degree corners containing a 3/8" bend radius and 1.50" top and bottom flange will be attached to the modular frame extension. The bumper will be extended 15.00" from front face of cab.

It will have fully covered stabilizer cylinders that tip within a pocket inside the covers allowing the bumper to be a single wrap around piece.

The bumper will be metal finished and painted job color.

GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and cab face. The gravel pan will be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

LIFT AND TOW MOUNTS

Mounted to the frame extension will be lift and tow mounts. The lift and tow mounts will be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes will be painted the same color as the frame.

TOW HOOKS

No tow hooks are to be provided. This truck will be equipped with a lift and tow package with integral tow eyes.

CAB

The Arrow XT cab will be designed specifically for the fire service and will be manufactured by the chassis builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

For reasons of structural integrity and enhanced occupant protection, the cab will be of heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar will be constructed of solid A356-T5 aluminum. The B-pillar and C-pillar will be constructed from 0.25" heavy wall extrusions. The rear wall will be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2) 3.00" x 2.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 6.50" x 4.875" x 0.1875" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.36" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.25" thick gusset plate, covered with a 0.090" front skin (for a total thickness of 0.34"), and reinforced with a 95.00" wide x 11.13" deep x 0.50" thick cross-cab support located just below the windshield. The cross-cab support will run the full width of the cab and weld to each A-pillar, the 0.25" thick gusset plate and the front skin.

The cab floors will be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.50" thick cross-floor support providing a total thickness of 0.6875" of structural material at the front floor area. The front floor area will also be supported with one (1) 0.50" plate bolted to one (1) 0.78" plate that also provides the mounting point for the cab lift. This tubing will run from the front of the cab to the 0.187" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

The cab will be 94.75" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The overall height (from the cab roof to the ground) will be approximately 103.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

The floor to ceiling height inside the crew cab will be 54.00" in the center and 59.25" in the outboard positions.

The crew cab floor will measure 30.12" from rear wall to the back side of engine tunnel.

The engine tunnel, at the rearward highest point (knee level), will measure 37.75" to the back wall.

The crew cab will be of the totally enclosed design with access doors constructed in the same manner as the driver and passenger doors.

The cab will be a full tilt cab style.

A 3-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

CAB ROOF DRIP RAIL

For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be constructed of bright polished extruded aluminum, and be bonded to the sides of the cab. The drip rail will extend the full length of the cab roof.

INTERIOR CAB INSULATION

The cab will include 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

FENDER LINERS

Full circular inner fender liners in the wheel wells will be provided.

WINDSHIELD

A curved safety glass windshield will be provided with over 2,754 square inches of clear viewing area. The cab windshield will have bright trim inserts in the rubber molding holding the glass in place. Economical windshield replacement glass will be readily available from local auto glass suppliers.

All cab glass will be tinted.

WINDSHIELD WIPERS

Two (2) electric windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The washer reservoir will be able to be filled without raising the cab.

GLOVE BOX

A glove box with a drop-down door will be installed in the front dash panel in front of the officer's position.

ENGINE TUNNEL

Engine tunnel side walls will be constructed of 0.50" aluminum. The top will be constructed of 0.19" aluminum and will be tapered at the top to allow for more driver and passenger elbow room.

The engine tunnel will be insulated for protection from heat and sound. Perforated foil faced insulation will be over a closed cell foam affixed with pressure sensitive adhesive and further secured with mechanical fasteners. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards.

CAB REAR WALL EXTERIOR COVERING

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

CAB LIFT

A hydraulic cab lift system will be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

The hydraulic pump will have a manual override for backup in the event of electrical failure.

Lift controls will be on a panel located on the right side pump panel or front area of the body in a convenient location.

The engine will be easily accessible and capable of being removed with the cab tilted. The cab will be capable of tilting 45 degrees and 90 degrees with crane assist.

Cab will be locked down by a 2-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm will be provided that must be manually put in place on the driver side between the chassis and cab frame when the cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

Cab Lift Interlock

The cab lift system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

The cab lift safety system will also be interlocked to the front stabilizers in the bumper. The cab tilt mechanism will be active only when the front stabilizers are fully stowed, and fully tilted outboard. The cab tilt mechanism will not allow the front stabilizers to be tilted inboard until the cab has been fully lowered and locked into position.

GRILLE

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

DOOR JAMB SCUFFPLATES

All cab door jambs will be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb.

SIDE OF CAB MOLDING

Chrome molding will be provided on both sides of cab.

MIRRORS

A Retrac, Model 613423, dual vision, motorized, west coast style mirror, with chrome finish, will be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass will be heated and adjustable with remote control within reach of the driver.

FRONT CROSS VIEW MIRROR

A Grote 8.00" diameter convex mirror will be provided. The mirror will provide the driver with a view of the right front bumper corner and the area several feet in front of the truck.

The mirror housing, tubing, clamps and hardware will be constructed of corrosion resistant stainless steel.

DOORS

To enhance entry and egress to the cab, the forward cab doors will be a minimum of 37.50" wide x 61.75" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab doors will measure a minimum of 34.88" wide x 61.75" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of 0.125". The exterior door skins will be constructed from 0.090" aluminum.

A flush mounted, chrome plated paddle type door handle will be provided on the exterior of each cab door. Each door will also be provided with an interior flush paddle handle.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks as required by FMVSS 206. The locks will be capable of activating when the doors are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle will be provided on the inside of each cab and crew cab door.

The cab steps at each door location will be located below the cab doors and will be exposed to the exterior of the cab.

Door Panels

There will be a full height brushed stainless steel door panel installed on the inside of all cab doors. The cab door panels will be removable without disconnecting door and window mechanisms.

MANUAL CAB DOOR WINDOWS

All cab entry doors will contain a conventional roll down window.

ELECTRIC CAB DOOR LOCKS

The front driver and officer doors will have a door lock master switch that will control all front and rear crew cab door locks. Each rear crew cab door will have its own lock control.

There will be one (1) concealed switch located right side air intake.

KEY PAD FOR ELECTRIC DOOR LOCKS

For improved convenience, the cab door locks will include a Trimark keypad entry system to provide complete keyless entry to the cab. There will be two (2) keypads provided, located one (1) each side of the cab behind the front cab doors. The keypads will include visual and audio feedback to confirm activation and acknowledge correct entry code. For enhanced night time use, the keypads will be lighted. For increased security, the system will allow over 3,000 possible code combinations.

CAB STEPS

The forward cab and crew cab access steps will be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps will be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps will be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps will be a minimum 24.75" wide, and the crew cab steps will be 21.25" wide with an 8.00" minimum depth. The inside cab steps will not exceed 18.00" in height and be limited to two (2) steps.

CAB EXTERIOR HANDRAILS

A 1.25" diameter slip-resistant, knurled aluminum handrail will be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.

STIRRUP STEPS

Hinged, swing style stirrup steps will be provided below each cab and crew cab door.

The stirrup step will be lit by a white 12 volt DC LED light provided on the step.

The step light will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body step lights.

STEP LIGHTS

For reduced overall maintenance costs compared to incandescent lighting, there will be four (4) white LED step lights provided. The lights will be installed at each cab and crew cab door, one (1) per step. The lights will be located in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light.

The lights will be activated when the adjacent door is opened.

FENDER CROWNS
Rubber fender crowns will be provided around the cab wheel openings.

Crowns will be black.

MOUNTING PLATE ON ENGINE TUNNEL
Equipment installation provisions will be installed on the engine tunnel.

A 0.25" smooth aluminum plate will be bolted to the top surface of the engine tunnel, including the top of the engine blister. The plate will be spaced off the engine tunnel .50" to allow for wire routing below the plate. The mounting surface will be painted to match the cab interior.

CAB INTERIOR
The left and right side dash and center console will be a flat faced design to provide easy maintenance and will be constructed out of painted aluminum.

The engine tunnel will be padded and covered with leather grain vinyl resistant to oil, grease and mildew.

For durability and ease of maintenance, the cab interior side walls will be painted aluminum. The rear wall will be painted aluminum.

The headliner will be installed in both forward and rear cab sections. Headliner material will be vinyl. A sound barrier will be part of its composition. Material will be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner will provide easy access for servicing electrical wiring or for other maintenance needs without removing the entire unit.

CAB INTERIOR UPHOLSTERY
The cab interior upholstery will be 36 oz dark silver gray vinyl.

CAB INTERIOR PAINT
The following metal surfaces will be painted black, vinyl textured paint:

- Modesty panel in front of driver
- Vertical surface of dash in front of the officer (not applicable for recessed dash)
- Power distribution in front of the officer
- Rear heater vent panels

The remaining cab interior metal surfaces will be painted fire smoke gray, vinyl texture paint.

CAB FLOOR
The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam, no water absorption, which offers a sound dampening material for reducing sound levels.

CAB DEFROSTER

There will be a 41,000 BTU defroster in the cab located under the engine tunnel.

The defroster ventilation will be built into the design of the cab dash instrument panel and will be easily removable for maintenance.

The defroster will have a 3-speed blower and temperature controls accessible to the driver and officer.

The defroster ducts will be designed to provide maximum defrosting capabilities for the front cab windows.

CAB/CREW CAB HEATER

Two (2) auxiliary heaters with 32,000 BTU each will be provided in the cab. The heaters will have a 3-speed blower and temperature controls accessible to the driver and officer. There will also be louvers located below the rear facing seat riser and below the driver and officer positions for airflow.

The heaters will be mounted, one (1) within each rear facing seat riser.

AIR CONDITIONING

A high-performance, customized air conditioning system will be furnished inside the cab and crew cab. A 13.10 cubic inch compressor will be installed on the engine.

A roof-mounted condenser that meets and exceeds the performance specification will be installed on the cab roof. The condenser cover to be painted to match the cab roof.

An evaporator unit that meets and exceeds the performance specification will be installed in the cab, located in the center of the cab ceiling over the engine tunnel. The evaporator will include two (2) high performance cores and plenums with multiple outlets, one (1) plenum directed to the front and one (1) plenum directed to the rear of the cab.

The evaporator unit will be provided with adjustable air outlets strategically located to direct air flow to the driver, officer and crew cab area.

All hose used will be class 1 type to reduce moisture ingression into the air conditioning system.

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

The air conditioner will be controlled by a single electronic control panel. For ease of operation, the control panel will include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver.

GRAVITY DRAIN TUBES

Two (2) condensate drain tubes will be provided for the air conditioning evaporator. The drip pan will have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan.

SUN VISORS

Two (2) smoked Lexan™ sun visors will be provided. The sun visors will be located above the windshield with one (1) mounted on each side of the cab.

There will be no retention bracket provided to help secure each sun visor in the stowed position.

GRAB HANDLE

A black rubber covered grab handle will be mounted on the lower portion of the driver's side cab entrance to assist in entering the cab. The grab handle will be securely mounted to the post area between the door and steering wheel column.

A black rubber covered grab handle will be mounted on the passenger's side door post, above the instrument panel.

ENGINE COMPARTMENT LIGHTS

There will be one (1) Whelen, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Whelen, Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination.

These light(s) will be activated automatically when the cab is raised.

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush latch will be provided on the access door.

SEATING CAPACITY

The seating capacity in the cab will be four (4).

DRIVER SEAT

A H.O. Bostrom, Sierra, air suspension high back seat will be provided in the cab for the driver. For increased convenience, the seat will include a manual control to adjust the horizontal position (5.50" travel). To provide flexibility for multiple driver configurations, the seat will have a reclining back, adjustable from 15 degrees back to 45 degrees forward. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat will include two (2) removable zip clean seat covers for the cushion, seat back and headrest and the foam of the seat to be an encapsulated barrier foam to create a waterproof barrier.

The seat will be furnished with a 3-point, shoulder type seat belt. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

OFFICER SEAT

A H.O. Bostrom, Sierra, air suspension seat will be provided in the cab for the passenger. For increased convenience, the seat will include a manual control to adjust the horizontal position (5.00" travel). The seat back will be a high back style with 9 degree fixed recline angle. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat will include two (2) removable zip clean seat covers for the cushion, seat back and headrest and the foam of the seat to be an encapsulated barrier foam to create a waterproof barrier.

The seat will be furnished with a 3-point, shoulder type seat belt. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

REAR FACING LEFT SIDE CABINET

A rear facing cabinet will be provided in the crew cab at the left side outboard position with interior and exterior access.

The cabinet will be 23.00" wide x 42.50" high x 26.00" deep with one (1) lap door hinged on the inboard side, painted to match the cab interior with two (2) non-locking D-ring latches. The clear door opening will be 16.75" wide x 40.00" high.

The cabinet will include one (1) infinitely adjustable shelf with a 0.75" up-turned lippainted to match the cab interior.

The cabinet will include no louvers.

The cabinet will have exterior access with one (1) double pan door painted to match the cab exterior with a locking D-ring latch with #751 key. The clear door opening will be 14.25" wide x 29.25" high. The door will be located on the side of the cab over the wheelwell. A rubber bumper will be used as a door stop.

The exterior access will be provided with a polished stainless steel scuffplate on the lower door frame.

The cabinet will be constructed of smooth aluminum and painted to match the cab interior.

Cabinet Light

There will be one (1) white LED strip light installed on the left side of the exterior cabinet door opening, one (1) white LED strip light installed on the right side of the exterior cabinet door opening and one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lights will be controlled by an automatic door switch.

REAR FACING RIGHT SIDE CABINET

A rear facing cabinet will be provided in the crew cab at the right side outboard position.

The cabinet will be 20.00" wide x 42.50" high x 24.00" deep with one (1) lap door hinged on the inboard side, painted to match the cab interior with two (2) non-locking D-ring latches. The clear door opening of the cabinet will be 13.75" wide x 40.00" high.

The cabinet will include one (1) infinitely adjustable shelf with a 0.75" up-turned lippainted to match the cab interior.

The cabinet will include no louvers.

The cabinet will also provide access from outside the cab with one (1) double pan door painted to match the cab exterior with a locking D-ring latch with #751 key. A rubber bumper will be provided as a door stop. The exterior clear door opening will be 10.00" wide x 29.50" high.

The exterior access will be provided with a polished stainless steel scuffplate on the lower door frame.

The cabinet will be constructed of smooth aluminum, and painted to match the cab interior.

Cabinet Light

There will be one (1) white LED strip light installed on the left side of the exterior cabinet door opening, one (1) white LED strip light installed on the right side of the exterior cabinet door opening and one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lights will be controlled by an automatic door switch.

FORWARD FACING DRIVER SIDE OUTBOARD SEAT

There will be one (1) forward facing flip-up seat provided at the driver side outboard position in the crew cab. The seat back will have a plywood backing, covered with foam padded upholstery. The seat bottom will be constructed of a piece of plywood covered with foam rubber and upholstery. The bottom cushion will have its bottom covered with brushed stainless steel, for a pleasant appearance when the seat bottom is in the up position. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle, that will activate an alarm indicating a seat is occupied but not buckled.

The seat will be furnished with a 3-point, shoulder type seat belt.

FORWARD FACING PASSENGER SIDE OUTBOARD SEAT

There will be one (1) forward facing flip-up seat provided at the passenger side outboard position in the crew cab. The seat back will have a plywood backing, covered with foam padded upholstery. The seat bottom will be constructed of a piece of plywood covered with foam rubber and upholstery. The bottom cushion will have its bottom covered with brushed stainless steel, for a pleasant appearance when the seat bottom is in the up position. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle, that will activate an alarm indicating a seat is occupied but not buckled.

The seat will be furnished with a 3-point, shoulder type seat belt.

SEAT UPHOLSTERY

All seat upholstery will be leather grain dark silver gray vinyl resistant to oil, grease and mildew. The cab will have four (4) seating positions.

SEAT BELTS

All seating positions in the cab, crew cab and tiller cab (if applicable) will have red seat belts.

To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards.

The 3-point shoulder type seat belts will also include the ReadyReach D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

Any flip up seats will include a 3-point shoulder type belts only.

SHOULDER HARNESS HEIGHT ADJUSTMENT

All seating positions furnished with 3-point shoulder type seat belts will include a height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter.

HELMET STORAGE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

CAB DOME LIGHTS

There will be four (4) Weldon 808* series, dual LED dome lights with black bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white .

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

OVERHEAD MAP LIGHTS

There will be two (2) white halogen, round adjustable map lights installed in the cab:

- One (1) overhead in front of the driving position.
- One (1) overhead in front of the passenger's position.

Each light will include a switch on the light housing.

The light switches will be connected directly to the battery switched power.

PORTABLE HAND LIGHTS, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.9.4 requires two portable hand lights mounted in brackets fastened to the apparatus.

The hand lights are not on the apparatus as manufactured. The fire department will provide and mount these hand lights.

CAB INSTRUMENTATION

The cab instrument panel will consist of gauges, an LCD display, telltale indicator lights, alarms, control switches, and a diagnostic panel. The function of instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section directly forward of the driver. Gauge and switch panels will be designed to be removable for ease of service and low cost of ownership.

Cab Interior

The wrap-around style high impact ABS plastic cab dash fascia will be designed to provide unobstructed visibility to instrumentation. The dash layout will provide the driver with a quick reference to gauges that allows more time to focus on the road.

Gauges

The gauge panel will include the following ten (10) ivory gauges with chrome bezels to monitor vehicle performance:

- Voltmeter Gauge (Volts):
    - Low volts (11.8 VDC)
        - Amber indicator on gauge assembly with alarm
    - High volts (15 VDC)
        - Amber indicator on gauge assembly with alarm
    - Very low volts (11.3 VDC)
        - Amber indicator on gauge assembly with alarm
    - Very high volts (16 VDC)
        - Amber indicator on gauge assembly with alarm
- Tachometer (RPM)
- Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)
- Fuel Level Gauge (Empty - Full in fractions):
    - Low fuel (1/8 full)
        - Amber indicator on gauge assembly with alarm
    - Very low fuel (1/32) fuel
        - Amber indicator on gauge assembly with alarm
- Engine Oil Pressure Gauge (PSI):
    - Low oil pressure to activate engine warning lights and alarms
        - Red indicator on gauge assembly with alarm

- Front Air Pressure Gauge (PSI):
    - Low air pressure to activate warning lights and alarm
        - Red indicator on gauge assembly with alarm
- Rear Air Pressure Gauge (PSI):
    - Low air pressure to activate warning lights and alarm.
        - Red indicator on gauge assembly with alarm
- Transmission Oil Temperature Gauge (Fahrenheit):
- High transmission oil temperature activates warning lights and alarm
    - Amber indicator on gauge assembly with alarm
- Engine Coolant Temperature Gauge (Fahrenheit):
    - High engine temperature activates an engine warning light and alarm
        - Red indicator on gauge assembly with alarm
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions):
    - Low fluid (1/8 full)
        - Amber indicator on gauge assembly with alarm

All gauges and gauge indicators will perform prove out at initial power-up to ensure proper performance.

Indicator Lamps

To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located above and below the center gauges. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- SRS (supplemental restraint system) fault (where applicable)
- DEF (low diesel exhaust fluid level)
- The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

Alarms

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

Alarm silence: Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

Indicator Lamp and Alarm Prove-Out

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

Control Switches

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver:

- Emergency master switch: A molded plastic push button switch with integral indicator lamp will be provided. Pressing the switch will activate emergency response lights and siren control. A green lamp on the switch provides indication that the emergency master mode is active. Pressing the switch again disables the emergency master mode.
- Headlight / Parking light switch: A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking lights and the headlights. The second switch position will activate the parking lights. The third switch position will activate the headlights.
- Panel back lighting intensity control switch: A three (3)-position momentary rocker switch will be provided. The first switch position decreases the panel back lighting intensity to a minimum

level as the switch is held. The second switch position is the default position that does not affect the back lighting intensity. The third switch position increases the panel back lighting intensity to a maximum level as the switch is held.

The following standard controls will be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications:

- High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp will be provided. The first switch position is the default switch position. The second switch position will activate and deactivate the high idle function when pressed and released. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.
- "Ok To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.
- The following standard controls will be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches will have backlit labels for low light applications.
- Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will deactivate vehicle ignition. The second switch position will activate vehicle ignition. The third momentary position will disable the Command Zone audible alarm if held for three (3) to five (5) seconds. A green indicator lamp will be activated with vehicle ignition.
- Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.
- 4-way hazard switch: A two (2)-position maintained rocker switch will be provided. The first switch position will deactivate the 4-way hazard switch function. The second switch position will activate the 4-way hazard function. The switch actuator will be red and includes the international 4-way hazard symbol.
- Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls will be provided. The windshield wiper control will have high, low, and intermittent modes.
- Parking brake control: An air actuated push/pull park brake control valve will be provided.
- Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

Custom Switch Panels

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to three (3) switch panels in the overhead console on the driver's side, up to four (4) switch panels in the engine tunnel console facing the driver, up to three (3) switch panels in the overhead console on the officer's

side and up to three (3) switch panels in the engine tunnel rear facing console accessible to both driver and officer. All switches will have backlit labels for low light applications.

Diagnostic Panel

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow ABS systems to provide blink codes should a problem exist. The diagnostic panel will include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (where applicable)
- Command Zone USB diagnostic port
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

Cab LCD Display

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature. The upper right section will display odometer, trip mileage, PTO hours, fuel consumption, engine hours, and other configuration specific information. The bottom section will display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

AIR RESTRICTION INDICATOR

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, will be illuminated automatically per the current NFPA requirements. The light will be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator will activate a pulsing alarm when the parking brake is released.

DO NOT MOVE TRUCK MESSAGES

Messages will be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake released).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- LS CAB DOOR, the left side cab door is open
- LS CAB COMPT DOOR, the left side cab compartment door is open
- LS CREWCAB DOOR, the left side crew cab door is open
- STEP NOT STOWED, pump house step not stowed
- LS TURNTABLE STEP, left side turntable step not stowed
- AERIAL CONTROL DR, aerial override control compartment door is open
- LS6 COMPT DR, the left side LS6 compartment door is open
- LS5 COMPT DR, the left side LS5 compartment door is open
- LS4 COMPT DR, the left side LS4 compartment door is open
- LS3 COMPT DR, the left side LS3 compartment door is open
- LS2 COMPT DR, the left side LS2 compartment door is open
- LS1 COMPT DR, the left side LS1 compartment door is open
- LS AIR BTL COMPT DR, the left side air bottle compartment door is open
- LS BASKET STEP, the left side basket steps not stowed
- STABILIZER CTRL DR, the rear stabilizer control compartment door is open
- STABILIZER DEPLOYED, the stabilizers are not stowed.
- LS CORD REEL DR, the left side cord reel compartment door is open
- RS CORD REEL DR, the right side cord reel compartment door is open
- B1 REAR COMPT DR, the rear B1 compartment door is open
- TURNTBL CTRL CNSL, the turntable control console not stowed.
- RS BASKET STEP, the right side basket steps not stowed
- RS AIR BTL COMPT DR, the right side air bottle compartment door is open.
- RS1 COMPT DR, the right side RS1 compartment door is open
- RS2 COMPT DR, the right side RS2 compartment door is open
- RS3 COMPT DR, the right side RS3 compartment door is open
- RS4 COMPT DR, the right side RS4 compartment door is open
- RS5 COMPT DR, the right side RS5 compartment door is open
- RS6 COMPT DR, the right side RS6 compartment door is open
- RS7 COMPT DR, the right side RS7 compartment door is open
- RS CREWCAB DR, the right side crew cab door is open
- RS CAB COMPT DR, the right side cab compartment door is open
- RS CAB DR, the right side cab door is open
- LT TOWER NOT STOWED, the light tower is not stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved will be displayed as a caution message after the parking brake is released.

SWITCH PANELS

The emergency light switch panel will have a master switch for ease of use plus individual switches for selective control. Each switch panel will contain eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments will include non-functioning black appliqués. Documentation will be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) will be located in the overhead position above the windshield on the driver side overhead to allow for easy access.

Additional switch panel(s) will be located in the overhead position(s) above the windshield or in designated locations on the lower instrument panel layout.

The switches will be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch will be illuminated white whenever back lighting is activated and illuminated green whenever the switch is active. An active illuminated switch will flash when interlock requirements are not met or device is actively being load managed. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed in the center of the switch. The label will allow light to pass through the letters for ease of use in low light conditions.

WIPER CONTROL

For simple operation and easy reach, the windshield wiper control will be an integral part of the directional light lever located on the steering column. The wiper control will include high and low wiper speed settings, a one (1)-speed intermittent wiper control and windshield washer switch. The control will have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

HOURMETER - AERIAL DEVICE

The following aerial hour meter messages will be included in the information centers:

- Aerial Hours, that keeps track of the time the aerial device is in motion.
- Aerial PTO Hours, that keeps track of the time the aerial master switch is on and the aerial PTO is engaged.

AERIAL MASTER

There will be a master switch for the aerial operating electrical system provided.

AERIAL PTO SWITCH

A PTO switch for the aerial with indicator light will be provided.

SPARE CIRCUIT

There will be two (2) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

- The positive wire will be connected directly to the battery power
- The negative wire will be connected to ground
- Wires will be protected to 15 amps at 12 volts DC
- Power and ground will terminate officer side dash area
- Termination will be with heat shrinkable butt splicing
- Wires will be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

INSTRUMENT PANEL RECESS

The instrument panel across from the officer will be recessed to accommodate the mounting of miscellaneous items. The glove box will be replaced with a painted sheet metal mounting platform/shelf. The recess will be 8.00" down x 8.00" back and 17.00" wide.

INFORMATION CENTER

An information center employing a 7.00" diagonal touch screen color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel will be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system
- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel will be included as outlined in the cab instrumentation area.
- Programmed to read US Customary

General Screen Design

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used.

If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition
- A red background/text color will indicate a warning condition
- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to

indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
- A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text or symbol.

Home/Transit Screen

This screen will display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if the water level system includes compatible communications to the information center)
- Foam Level (if the foam level system includes compatible communications to the information center)
- Seat Belt Monitoring Screen Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

On Scene Screen

This screen will display the following and will be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel
- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)
- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

Virtual Buttons

There will be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

Page Screen

The page screen will display the following and allow the user to progress into other screens for further functionality:

- Diagnostics
    - Faults

        - Listed by order of occurrence
        - Allows to sort by system
    - Interlock
        - Throttle Interlocks
        - Pump Interlocks (if equipped)
        - Aerial Interlocks (if equipped)
        - PTO Interlocks (if equipped)
    - Load Manager
        - A list of items to be load managed will be provided. The list will provide a description of the load.
        - The lower the priority numbers the earlier the device will be shed should a low voltage condition occur.
        - The screen will indicate if a load has been shed (disabled) or not shed.
        - "At a glance" color features are utilized on this screen.
    - Systems
        - Command Zone
            - Module type and ID number
            - Module Version
            - Input or output number
            - Circuit number connected to that input or output
            - Status of the input or output
            - Power and Constant Current module diagnostic information
        - Foam (if equipped)
        - Pressure Controller (if equipped)
        - Generator Frequency (if equipped)
    - Live Data
        - General Truck Data
- Maintenance
    - Engine oil and filter
    - Transmission oil and filter
    - Pump oil (if equipped)
    - Foam (if equipped)
    - Aerial (if equipped)
- Setup
    - Clock Setup
    - Date & Time
        - 12 or 24 hour format
        - Set time and date
    - Backlight
        - Daytime
        - Night time
        - Sensitivity

    - Unit Selection
    - Home Screen
    - Virtual Button Setup
    - On Scene Screen Setup
    - Configure Video Mode
        - Set Video Contrast
        - Set Video Color
        - Set Video Tint
- Do Not Move
    - The screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicated
        - Driver Side Cab Door
        - Passenger's Side Cab Door
        - Driver Side Crew Cab Door
        - Passenger's Side Crew Cab Door
        - Driver Side Body Doors
        - Passenger's Side Body Doors
        - Rear Body Door(s)
        - Ladder Rack (if applicable)
        - Deck Gun (if applicable)
        - Light Tower (if applicable)
        - Hatch Door (if applicable)
        - Stabilizers (if applicable)
        - Steps (if applicable)
- Notifications
    - View Active Alarms
        - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm
        - Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)
- Ascendant Set Up Confirmation (if equipped)

Button functions and button labels may change with each screen.

COLLISION MITIGATION

There will be a HAAS Alert®, Model HA5 Responder-to-Vehicle (R2V) collision avoidance system provided on the apparatus. The HA5 cellular transponder module will be installed behind the cab windshield, as high and near to the center as practical, to allow clear visibility to the sky. The module dimensions are 5.40" long x 2.70" wide x 1.30" high, and operating temperature range is -40 degree C to 85 degree C.

The transponder will be connected to the vehicle's emergency master circuit and battery direct power and ground.

While responding with emergency lights on, the HA5 transponder sends alert messages via cellular network to motorists in the vicinity of the responding truck that are equipped with the WAZE app.

While on scene with emergency lights on, the HA5 transponder sends road hazard alerts to motorists in the vicinity of the truck that are equipped with the WAZE app.

The HA5 Responder-to-Vehicle (R2V) collision avoidance system will include the transponder and a 5 year cellular plan subscription.

Activation of the HAAS Alert system requires a representative of the customer to accept the End User License Agreement (EULA) via an on-line portal.

VEHICLE DATA RECORDER

There will be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

Seat Belt Monitoring System

A seat belt monitoring system (SBMS) will be provided on the Command Zone™ color display and in the center overhead of the cab instrument panel. The SBMS will be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated

- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm

The seat belt monitoring screen will become active on the Command Zone color display when:

- The home screen is active:
    - and there is any occupant seated but not buckled or any belt buckled with an occupant.
    - and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS will be activated.

The SBMS will include an audible alarm that will warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

INTERCOM SYSTEM

A four (4) position Sigtronics, Model US-45D, intercom system with dual radio interface capability for the driver and officer will be provided. Two (2) crew cab positions, located at both forward facing seats , will have radio listen / intercom only capabilities.

System includes:

- One (1) US-45D Intercom
- Four (4) Interior Headset Jacks, enclosed in blue mounting boxes
- Two (2) Push-to-Transmit switches, enclosed in blue mounting boxes
- All necessary cabling and mounting provisions

RADIO / INTERCOM INTERFACE CABLES

The apparatus manufacturer will supply and install two (2) radio interface cables before delivery of the vehicle.

The radio equipment to be used by the customer will be:

- Motorola High Power , Model to be determined
- Bendix King , Model to be determined

HEADSET, UNDER HELMET

There will be four (4) Sigtronics, Model SE-8, under helmet, standard headset(s) provided driver, officer, two outboard forward facing seats.

Each headset will feature:

- Coiled cord with single nickel coated plug
- Noise cancelling electret microphone with wind muff
- Flexible microphone boom rotates 180 degrees for left or right dress
- Gel filled earseals
- Volume control

- 24 dB noise reduction

HEADSET HANGERS

There will be four (4) headset hanger(s) installed driver's seat, officer's seat, driver's side outboard forward facing seat and passenger's side outboard forward facing seat. The hanger(s) will meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.

VEHICLE CAMERA SYSTEM

There will be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse.
- One (1) camera located on the right side of the apparatus, pointing rearward, displayed automatically with the right side turn signal.

The camera images will be displayed on the driver's vehicle information center display. Audio from the microphone on the rear camera will be not provided.

The following components will be included:

- One (1) SV-CW134639CAI Camera
- One (1) CS134404CI Side camera
- One (1) Amplified speaker (if applicable)
- All necessary cables

ELECTRICAL POWER CONTROL SYSTEM

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

SOLID-STATE CONTROL SYSTEM

A solid-state electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field re programmable to accommodate changes to the vehicle's operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40C to +70C
- Storage temperature from -40C to +70C
- Vibration to 50g

IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)

Operating voltage from eight (8) volts to 16 volts DC

The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

CIRCUIT PROTECTION AND CONTROL DIAGRAM

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

ON-BOARD ADVANCED/VISUAL ELECTRICAL SYSTEM DIAGNOSTICS

The on-board information center will include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

All control system modules, with the exception of the main control module, will contain on-board visual diagnostic LEDs that assist in troubleshooting. The LEDs will be enclosed within the sealed, transparent module housing near the face of the module. One LED for each input or output will be provided and will illuminate whenever the respective input or output is active. Color-coded labels within the modules will encompass the LEDs for ease of identification. The LED indicator lights will provide point of use information for reduced troubleshooting time without the need for an additional computer.

TECH MODULE WITH WIFI

An in cab module will provide WiFi wireless interface and data logging capability. The WiFi interface will comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module will provide an external antenna connection allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

The module will transmit a password protected web page to a WiFi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level will allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level will allow diagnostic access to inputs and outputs installed on the Command Zone™, control and information system.

The data logging capability will record faults from the engine, transmission, ABS and Command Zone™, control and information systems as they occur. No other data will be recorded at the time the fault occurs. The data logger will provide up to 2 Gigabytes of data storage.

A USB connection will be provided on the Tech Module. It will provide a means to download data logger information and update software in the device.

PROGNOSTICS

A software based vehicle tool will be provided to predict remaining life of the vehicles critical fluid and events.

The system will send automatic indications to the Command Zone, color display and/or wireless enabled device to proactively alert of upcoming service intervals.

Prognostics will include:

- Engine oil and filter
- Transmission oil and filter
- Pump oil (if equipped)
- Foam oil (if equipped)
- Aerial oil and filter (if equipped)

ADVANCED DIAGNOSTICS

An advanced, Windows-based, diagnostic software program will be provided for this control system. The software will provide troubleshooting tools to service technicians equipped with a Windows-based computer or wireless enabled device.

The service and maintenance software will be easy to understand and use and have the ability to view system input/output (I/O) information.

INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

VOLTAGE MONITOR SYSTEM

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

DEDICATED RADIO EQUIPMENT CONNECTION POINTS

There will be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment.

- The studs will consist of the following:
- 12-volt 40-amp battery switched power
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power

There will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

ENHANCED SOFTWARE

The solid-state control system will include the following software enhancements:

All perimeter lights and scene lights (where applicable) will be deactivated when the parking brake is released.

Cab and crew cab dome lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

1. All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.

2. Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
3. Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas will have silicon (1890) applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

BATTERY SYSTEM

There will be six (6) 12 volt Exide®, Model 31S950X3W, batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 5700 CCA at 0 degrees Fahrenheit
- 1140 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

BATTERY CHARGER

There will be a Blue Sea, Model P12, battery charger provided. A Blue Sea, Model 7517, P12 remote will be included with the installation. Three bar graphs will be provided on the remote display.

The charger will have a maximum output of 40 amps and a fully automatic regulation.

The battery charger will be wired to the AC shoreline inlet through an AC receptacle adjacent to the battery charger.

The battery charger will be located in the left body compartment mounted on the left wall as high as possible.

The battery charger indicator will be located near the driver's seat riser with special bracketry.

BATTERY SYSTEM

There will be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

MASTER BATTERY SWITCH

There will be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

SHORELINE INLET

There will be one (1) Blue Sea Sure Eject™ part number 7851, 20 amp 120 volt AC shoreline inlet provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline will be connected to battery charger.

The shoreline inlet cover color to be red.

The connector body will be released from the inlet when the apparatus engine start button is activated.

There will be a mating connector body supplied with the loose equipment.

There will be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

The shoreline receptacle will be located on the driver side exterior of cab, behind crew cab door.

BATTERY COMPARTMENTS

Batteries will be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments will be constructed of 0.188" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The battery hold-downs will be of a non-corrosive material. All bolts and nuts will be stainless steel.

The compartments will include formed fit heavy duty roto-molded polyethylene battery trays with drain tubes for the batteries to sit in.

Heavy-duty battery cables will be used to provide maximum power to the electrical system. Cables will be color-coded.

Battery terminal connections will be coated with anti-corrosion compound. Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers will be installed on the bottom of the driver's side battery box. This will provide for easy jumper cable access.

ALTERNATOR

There will be a Leece-Neville, Model BLP4003, alternator provided. It will have a rated output current of 420 amp as measured by SAE method J56. The alternator will feature an integral, self diagnostic regulator and rectifier. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

ELECTRONIC LOAD MANAGER

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components will not be allowed.

The system will include the following features:

- System voltage monitoring.
- A shed load will remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
    - If enabled:
        - "Load Man Hi-Idle On" will display on the information center.

        - Hi-Idle will not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
    - ON = not shed
    - SHED = shed

SEQUENCER

A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

HEADLIGHTS

There will be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:

- the outside light on each side will contain a part number 055***1 low beam module
- the inside light on each side will contain a part number 055***1 high beam module
- the headlights to include chrome bezels

The low beam lights will be activated when the headlight switch is on.

The high beam and low beam lights will be activated when the headlight switch and the high beam switch is activated.

DIRECTIONAL LIGHTS

There will be two (2) Whelen 600® series, LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

The color of the lenses will be the same color as the LED's.

INTERMEDIATE LIGHT

There will be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light will double as a turn signal and marker light.

CAB CLEARANCE/MARKER/ID LIGHTS

There will be seven (7) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.
- Two (2) amber LED marker lights will be installed, one (1) on each side above the cab doors.

FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS

There will be two (2) Truck-Lite®, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab.

The lights will activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

REAR CLEARANCE/MARKER/ID LIGHTING

There will be three (3) LED identification lights located at the rear of the apparatus installed per the following:

- As close as practical to the vertical centerline and one (1) on each outside edge
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height
- All visible from the rear

There will be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical

- Red in color
- To be visible from the rear
- All at the same height

There will be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

MARKER LIGHTS

There will be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear most lower corner of the body. The amber lens will face the front and the red lens will face the rear of the truck.

These lights will be activated with the running lights of the vehicle.

REAR FMVSS LIGHTING

The rear stop/tail and directional LED lighting will consist of the following:

- Two (2) Whelen®, Model M6BTT, red LED stop/tail lights
- Two (2) Whelen, Model M6T, amber LED arrow turn lights

The lights will be provided with color lenses.

The lights will be mounted in a polished combination housing.

There will be two (2) Whelen Model M6BUW, LED backup lights provided in the tail light housing.

LICENSE PLATE BRACKET

There will be one (1) license plate bracket mounted on the rear of the body.

A white LED light will illuminate the license plate. A stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

LIGHTING BEZEL

There will be two (2) Whelen, Model M6FCV4P, four (4) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.

BACK-UP ALARM

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

CAB PERIMETER SCENE LIGHTS

There will be four (4) Amdor, Model AY-LB-12HW020, 350 lumens each, 20.00" white LED strip lights provided, one (1) for each cab door.

These lights will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

PUMP HOUSE PERIMETER LIGHTS

There will be one (1) Amdor, Model AY-LB-12HW020, 350 lumens, 20.00" LED weatherproof strip light with bracket provided under the passenger's side pump panel running board.

If the combination of options in the vehicle does not permit clearance for a 20.00" light, a 12.00" version of the Amdor light will be installed.

The light will be activated when the battery switch is on, and controlled by the same means as the body perimeter lights.

BODY PERIMETER SCENE LIGHTS

There will be three (3) Amdor®, Model AY-LB-12HW012, 190 lumen, 12.00" long, white 12 volt DC LED strip lights provided.

The lights will be mounted in the following locations.

- One (1) light will be provided under the left side turntable access steps
- One (1) light will be provided under the left side basket access steps
- One (1) light will be provided under the right side basket access steps

The perimeter scene lights will be activated when a switch within reach of the driver is activated and the parking brake is applied.

ADDITIONAL PERIMETER LIGHTS

There will be six (6) lights - Amdor® Model AY-LB-12HW020, 350 lumens, 20.00" long, with white LED's installed with one (1) light under each side of the front bumper spaced evenly, one (1) light

under compartment LS1, one (1) light under comipartment RS1, one (1) light under comipartment LS4 and one (1) light under comipartment RS4.

With the chassis battery switch energized, the lights will be activated by the same means as the body perimeter lights.

HOSE BED LIGHTS

There will be 12 volt DC light strips with stainless steel protective covers and white LEDs provided to illuminate the hose bed area per the following:

- A light strip will be installed along the front edge of the hose bed facing rearward.
- A light strip will be installed under the boom support facing forward.

The lights will be activated when the aerial device is raissed.

REAR SCENE LIGHTS

There will be two (2) Whelen®, Model M6ZC white LED scene lights mounted in Model M6P15*, 15 degree chrome trim angled downward, installed at the rear of the apparatus. These lights will be installed between 58.00" and 72.00" above the ground.

The lights will be controlled by a switch at the driver's side switch panel.

WALKING SURFACE LIGHT

There will be two (2) Model P25 12 volt DC LED lights provided to illuminate the top of body walking surface. These LED lights will be located on the rear facing surface of the upper portion of the body to illuminate the walking surface to the platform basket. There will be a Model FRP, 4" round black 12 volt DC LED floodlight located forward on the left side top of the body.

These lights will be activated when "Aerial Master" is on.

WATER TANK

The water tank will have a capacity of 300 gallons and will be constructed of UV stabilized ultra high impact polypropylene plastic.

The joints and seams will be nitrogen welded inside and out.

The tank will be baffled in accordance with the current edition of NFPA 1901 requirements.

The baffles will have vent openings at both the top and bottom of each baffle to permit movement of air and water between compartments.

The longitudinal partitions will be constructed of 0.38" polypropylene plastic and extend from the bottom of the tank through the top cover to allow positive welding.

The transverse partitions extend from 4.00" off the bottom to the underside of the top cover.

All partitions interlock and will be welded to the tank bottom and sides.

The tank top will be constructed of 0.50" polypropylene.

It will be recessed 0.38" and will be welded to the tank sides and the longitudinal partitions.

It will be supported to keep it rigid during fast filling conditions.

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions.

Two (2) of the dowels will be drilled and tapped (0.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump will be provided at the bottom of the water tank. The sump will include a drain plug and the tank outlet.

Tank will be installed on top of the torque box with the use of two (2) brackets constructed of structural steel. The torque box will resist transferring any torsional stress caused by the chassis frame flexing to the water tank.

Rubber cushions, 0.50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops will be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Tank mounting system will be approved by the manufacturer.

Fill tower will be constructed of .50" polypropylene and will be a minimum of 6.00" wide x 12.00" long.

Fill tower will be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 3.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

HOSE BED

The hose bed will be fabricated of 0.125" 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi.

The hose bed will be located between the aerial boom support and water tank.

There will be a hose chute to the side and rear of the hose bed on the right side to allow for payout/removal of the hose.

The hose bed flooring will consist of removable aluminum grating with a top surface that is perforated to aid in hose aeration.

Hose capacity will be a minimum of 1000' of 4.00" large diameter hose.

AERIAL HOSE BED HOSE RESTRAINT

The hose in the hose bed will be restrained as follows:

- The hose bed forward of the aerial boom support and in the upper body area will be restrained by a red vinyl cover with Velcro® securing all four (4) sides.
- The hose bed chute located under the aerial basket will be restrained by an aluminum treadplate cover and guide plate at the transition point of the upper hose bed to the lower hose chute. The cover will hinge to the inside to allow ease of access to the hose.
- The rear of the hose bed chute will be restrained with black webbing that will have 1.00" web straps that loop through footman loops and fasten with spring clip and hook fasteners.

RUNNING BOARDS

The running boards will be fabricated of 0.125" bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards will be 13.00" deep and are spaced away from the body 0.50".

A splash guard will be provided to keep road dirt or water from splashing up onto the pump panels.

The running boards will have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards will be covered with bright aluminum treadplate.

TURNTABLE STEPS

Access to the turntable will be provided by a set of swing-down steps on the left side of the truck. There shall be no bottom flip step provided. The bottom step will have a step height not exceeding 24.00" from the ground to the top surface of the step at any time. All steps will have a height no greater than 14.00" from top surface to top surface.

The access steps will be located just behind the front body and in front of the middle stabilizer.

The swing down step assembly will be constructed of D/A finished aluminum with bright aluminum treadplate steps. The steps shall have a punched grip pattern design.

The stepwell will be lined with bright aluminum treadplate to act as scuffplates.

A knurled aluminum handrail will be provided on the left side of the steps.

Holes will be provided in each side step plate for hand holds.

The steps will be connected to the "Do Not Move Truck" indicator in the cab.

STEP LIGHTS

There will be three (3) white LED step lights provided for the aerial turntable access steps.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The step lights will be actuated by the aerial master switch in the cab.

SMOOTH ALUMINUM REAR WALL

The rear wall will be smooth aluminum.

TOW EYES

Two (2) rear painted tow eyes will be located at the rear of the apparatus and will be mounted directly to the frame rails. The inner and outer edges of the tow eyes will be radiused.

COMPARTMENTATION

Compartmentation will be fabricated of 0.125" 5052 aluminum.

Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided. For prevention of rust pockets and ease of maintenance, the fender liners will be formed from aluminum and removable for maintenance.

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers will have the corners welded.

Side compartment covers will be separate from the compartment tops.

All screws and bolts, which are not Grade 8, will be stainless steel and where they protrude into a compartment will have acorn nuts on the ends to prevent injury.

UNDERBODY SUPPORT SYSTEM

The backbone of the body support system will begin with the aerial torque box which is the strongest component of the apparatus and is designed for sustaining maximum loads.

An aluminum body structure will be mounted to the aerial torque box at four (4) points using neoprene elastomer isolators. The front mounts will attach from structural steel brackets on the sides of the torque box to a structural tube on the body. The rear mounts will attach structural members on the rear body to the top of the rear down rigger mounting structure.

The combination of the elastomer isolators and the body structure design allow the chassis and torque box to flex without driving loads into the body.

The compartment floor support design will result in an 800 lb equipment support rating per lower compartment, and a 500 lb equipment support rating for the upper, over the axle compartments.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

LOUVERS

All body compartments will be vented to provide one (1) way airflow out of the compartment that prevents water and dirt from gaining access to the compartment.

TESTING OF BODY DESIGN

Body structural analysis will be fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, and strain gauging have been performed with special attention given to fatigue, life and structural integrity of the body and substructure.

The body will be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle on at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

LEFT SIDE COMPARTMENTATION

The override door forward of the stabilizer will include a pair of SouthCo C2 chrome raised trigger lever latches.

A full height rollup door compartment ahead of the rear wheels will be approximately 29.16" wide x 23.25" high (floor to false ceiling) x 27.13" deep inside with a minimum clear door opening of approximately 26.38" wide x 21.37" high.

One (1) liftup door compartment above the fender compartments and over the rear axles will be provided. The compartment will be approximately 84.00" wide x 22.13" high x 27.13" deep inside with a clear door opening of approximately 81.25" wide x 19.13" high.

A full height rollup door compartment behind the rear wheels will be approximately 41.25" wide x 47.00" high (floor to false ceiling) x 27.13" deep. The minimum clear door opening will be approximately 38.50" wide x 47.00" high.

One (1) rollup door compartment behind the rear stabilizer will be provided. The compartment will be approximately 18.13" wide x 38.63" high (floor to false ceiling) x 27.13" deep inside with a minimum clear door opening of approximately 15.50" wide x 38.87" high.

Roll-up door compartments will include a drip pan below the roll of the door.

RIGHT SIDE COMPARTMENTATION

A full height rollup door compartment ahead of the front stabilizer will be provided. The compartment will be approximately 18.38" wide x 27.25" high (floor to false ceiling) x 9.91" deep inside with a minimum clear door opening of approximately 15.63" wide x 28.37" high.

A full height rollup door compartment ahead of the rear wheels will be approximately 29.13" wide x 23.25" high (floor to false ceiling) x 27.13" deep inside with a minimum clear door opening of approximately 26.38" wide x 21.37" high.

One (1) liftup door compartment above the fender compartments and over the rear axles will be approximately 59.00" wide x 22.13" high x 15.75" deep inside with a clear door opening of approximately 56.25" wide x 19.13" high.

A full height rollup door compartment behind the rear wheels will be approximately 41.25" wide x 47.00" high (floor to false ceiling). It will be 27.13" deep in the lower 41.50" of compartment height and 15.75" deep in the remaining upper portion. The minimum clear door opening will be approximately 38.50" wide x 47.00" high.

One (1) rollup door compartment behind the rear stabilizer will be approximately 18.13" wide x 38.63" high (floor to false ceiling) x 27.13" deep inside with a minimum clear door opening of approximately 15.50" wide x 38.87" high.

Roll-up door compartments will include a drip pan below the roll of the door.

SIDE COMPARTMENT ROLL-UP DOORS

There will be nine (9) compartment doors installed on the side compartments. The Gortite doors will be double faced aluminum construction and painted one (1) color to match the lower portion of the body.

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Doors will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surfaces will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter.

The header for the rollup door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

SIDE COMPARTMENT LAP DOORS

All hinged compartment doors will be lap style with double panel construction and fabricated of 0.09" 5052H32 aluminum. Doors will be a minimum of 1.50" thick. To provide additional door strength, a "C" section reinforcement will be installed between the outer and interior panels.

Doors will be provided with a closed cell rubber gasket around the surface that laps onto the body. A second heavy-duty automotive rubber molding with a hollow core will be installed on the door framing that seals onto the interior panel, to ensure a weather resisting compartment.

All compartment doors will have polished stainless steel continuous hinge with a pin diameter of 0.25", that is bolted or screwed on with stainless steel fasteners. A dielectric substance will be applied to each hinge fastener.

All door lock mechanisms will be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside shifts into the lock area.

Doors will be latched with recessed, polished stainless steel D-ring handles and Eberhard 106 locks.

To prevent corrosion caused by dissimilar metals, compartment door handles will not be attached to outer door panel with screws. A rubber gasket will be provided between the D-ring handle and the door.

REAR BUMPER

A 3.00" rear bumper will be furnished. Bumper will be constructed of steel and will be covered with polished aluminum treadplate. The bumper will be 2.50" deep x 4.00" high and will be spaced away from the body approximately 0.50". The corners of the bumper will be angled at 45 degrees to be flush with the angled rear body. It will extend the full width of the body.

LIFTUP DOOR PULL STRAPS

two (2) compartment doors will be provided with pull straps. The pull straps will be 20.00" long and orange in color.

The straps will be installed directly to the inside of the liftup door.

The liftup door compartments to have these straps will be LS3 & RS3.

COMPARTMENT LIGHTING

There will be nine (9) compartment(s) with two (2) white 12 volt DC LED compartment light strips. The dual light strips will be centered vertically along each side of the door framing. There will be two (2) light strips per compartment.The dual light strips will be in all body compartment(s).

Any remaining compartments without light strips will have a 6.00" diameter Truck-Lite, Model: 79384 light. Each light will have a number 1076 one filament, two wire bulb.

Opening the compartment door will automatically turn the compartment lighting on.

MOUNTING TRACKS

There will be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks will not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks will be provided in each compartment except for the one that contains the pump operator's panel.

ADJUSTABLE SHELVES

There will be two (2) shelves with a capacity of 500 lb provided.

The shelf construction will consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location(s) will be in RS2 centered between the floor and the ceiling and in LS2 centered between the floor and ceiling.

ONE WAY HOSE TRAY

one (1) slide-out tray 120.00" long slide-out hose tray will be provided on the rear ladder torque box (Sized for 300' of 3.00") side in the torque box. The tray inside dimensions will be approximately 11.00" wide by 15.00" high.

The capacity rating will be 500 pounds in the extended position.

Tray will slide out in one (1) direction only; 120.00" of its length.

The construction will consist of .188" thick aluminum for the sides and inside end of the tray. The outside end of the tray will be left open for hose deployment.

The top 7.00" of the outside of the tray will be hinged and flip down when the tray is fully extended. This will aid in the repacking of the hose.

Tray will be supported by a 130.00" Innovative Industries SlideMaster slide system.

Locks will be provided for both the in and out tray positions.

SLIDE-OUT ADJUSTABLE HEIGHT TRAY

There will be three (3) slide-out trays provided.

Each tray will have 2.00" high sides and a capacity rating of up to 250 lb in the extended position.

Each tray will be unpainted.

Each tray will be mounted on a pair of side mounted slides. The slide mechanisms will have ball bearings for ease of operation and years of dependable service. The slides will be mounted to shelf tracks to allow the tray to be adjustable up and down within the designated mounting location.

An automatic lock will be provided for both the in and out tray positions. The lock trip mechanism will be located at the front of the tray and will be easily operated with a gloved hand.

The tray(s) will be located LS1, RS1, RS4.

SLIDE-OUT/TILT-DOWN TRAY

There will be one (1) slide-out tray provided.

The bottom of each tray will constructed of 0.188" thick aluminum while special aluminum extrusions will be utilized for the tray sides, ends, and tracks. The corners will be welded to form a rigid unit.

A spring loaded lock will be provided on each side at the front of the tray. Releasing the locks will allow the tray to slide out approximately two-thirds (2/3) of its length from the stowed position and tip 30 degrees down from horizontal. The tray will be equipped with ball bearing rollers for smooth operation.

Rubber padded stops will be provided for the tray in the extended positions.

The capacity rating of the tray will be a minimum of 215 lb in the extended position.

The vertical position of the tray within the compartment will be adjustable.

The tray(s) will be located in LS4.

SLIDE-OUT FLOOR MOUNTED TRAY

There will be one (1) floor mounted slide-out tray(s) provided LS4. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of .19" aluminum. The finish will be painted to match compartment interior. Any side taller than 2.00" in height will contain pegboard pattern with .19" diameter holes.

The side height of the tray(s) will be as follows:

- Front: 2.00" high
- Rear: 2.00" high
- Left Side: 2.00" high
- Right Side: 2.00" high

There will be two undermount-roller bearing type slides rated at 250lb each provided. Each slide will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

SLIDE-OUT FLOOR MOUNTED TRAY

There will be one (1) floor mounted slide-out tray(s) with 2.00" sides provided LS2. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of .19" aluminum with non-welded corners. The finish will be painted spatter gray.

There will be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

SLIDE-OUT TOOLBOARD

A slide-out aluminum toolboard will be provided.

It will be a minimum of 0.188" thick and spatter gray painted .

A 1.00" x 1.00" aluminum tube frame will be welded to the edge of the pegboard. A handhold cutout will be provided on the outboard edge of the toolboard.

The board will be mounted on an undermount-roller bearing type slide rated at 250 lb with a factor of safety of 2.

To ensure years of dependable service the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

The board will have positive lock in the stowed and extended position.

The toolboard will be mounted on adjustable tracks side to side within the compartment.

There will be One (1) provided.

The toolboard(s) will be located RS2.

SWING OUT TOOLBOARD

A swing out aluminum toolboard will be provided.

It will be a minimum of .188" thick with a 1.00" x 1.00" aluminum tube frame welded around the edge.

The board will be mounted on a pivoting device at the back of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 pounds.

The board will have positive lock in the stowed and extended position.

The board will be mounted on adjustable tracks from front to back within the compartment.

There will be One (1) toolboard(s) provided. The toolboard(s) will be spatter gray painted and installed LS3 (latched to the center vertical partition).

SWING OUT TOOLBOARD

A swing out aluminum toolboard will be provided.

It will be a minimum of .188" thick with a 1.00" x 1.00" aluminum tube frame welded around the edge.

The board will be mounted on a pivoting device at the front of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 pounds.

The board will have positive lock in the stowed and extended position.

The board will be mounted on adjustable tracks from front to back within the compartment.

There will be One (1) toolboard(s) provided. The toolboard(s) will be spatter gray painted and installed LS3 (latched to center vertical partition).

VERTICAL DIVIDER

A .12" thick aluminum vertical compartment divider will be provided Rs2 with 24" clear door opening from front. RS3 as close as possible to the cord reel, LS3 in center of compartment, LS2 located 12" from forward wall.. The divider will be secured in place with #10 self tapping screws.

A total of four (4) will be provided.

STORAGE AREA FOR CRIBBING

Smooth unpainted angled aluminum will be provided on the floor of one (1) compartment(s) located in RS1 compartment(s).

This overlay is to be angled so that cribbing stored in this compartment will not work out to the door. Floor to be angled back from the door frame to the interior of the compartment. The front will be approximately 2.00" taller than the rear.

RUB RAIL

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 3.12" high with 1.50" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

BODY FENDER CROWNS

Rubber fender crowns will be provided around the rear wheel openings.

A brushed stainless steel unpainted fender liner will be provided to avoid paint chipping. The liners will be removable to aid in the maintenance of rear suspension components.

HARD SUCTION HOSE

Hard suction hose will not be required.

HANDRAILS

The handrails will be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

Handrails will be provided to meet NFPA 1901 section 15.8 requirements. The handrails will be installed as noted on the sales drawing.

THREE AIR BOTTLE/EXTINGUISHER STORAGE COMPARTMENT

A total of two (2) air bottle compartments will be provided and located one (1) on the left side and one (1) on the right side centered between the tandem rear wheels. The compartment will consist of individual bins each designed to hold an air bottles or extinguishers with a maximum diameter of 8.00" and a maximum depth of 26.00".

Each compartment will hold three (3), two (2) stored next to each other in the top area, and one (1) stored centered below. Each bin will be separated by a partition.

A drain hole and black rubber matting will be provided on the floor of each compartment. A lift up with pneumatic spring with a pair of Southco raised trigger C2 chrome lever latches will be provided for each compartment. The door will be painted stainless steel. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

COMPARTMENT STRAP

Straps will be provided in the compartment(s) to help contain the equipment. The straps will wrap around the neck of each and attach to the wall of the compartment.

DOUBLE AIR BOTTLE STORAGE IN FENDER PANEL CORNER

A total of one (1) air bottle compartment will be provided in the upper corner(s) of the right side fender panel. The compartment(s) will be located on the right side ahead of the rear wheel. The air bottle compartment(s) will be 7.50" wide x 7.50" tall x 26.00" deep. Each compartment will be square with angled corners and be mounted separately in a diagonal fashion, one above the other.

A triangular shaped vertically hinged door with a Southco raised trigger C2 chrome lever latch will be provided for each compartment. The door will be painted stainless steel. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Each compartment will have a drain hole and black rubber matting.

EXTINGUISHER/AIR BOTTLE/ STORAGE (TRIANGULAR)

A total of two (2) extinguisher/air bottle/storage compartments will be provided PS behind rear wheels. The triangular shaped compartment will be sized to fit a 8.00" diameter extinguisher in the lower area and a 8.00" diameter extinguisher in the upper area. The compartment will be approximately 25.50" deep. A partition will be provided to separate the compartment. Also inside the compartment, black rubber matting will be provided. The compartment will be furnished with a drain hole. A painted stainless steel, triangular shaped door with a Southco raised trigger C2 chrome lever latch will be provided to contain the air bottles. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

AIR BOTTLE COMPARTMENT STRAP

A strap will be provided in the air bottle compartment(s) to help contain the bottles when the vehicle is parked on an incline. The strap will wrap around the neck and attach to the wall of the compartment.

AIR BOTTLE STORAGE

A total of one (1) air bottle compartment will be provided and located on the left side rearward of the rear wheels. The triangular door shall cover the air bottle opening and the fuel tank access.. The air bottle compartment will be a minimum of 15.00" wide x 7.50" tall x 26.00" deep. A painted stainless steel, triangular shaped door with a Southco raised trigger C2 chrome lever latch will be provided. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

AIR BOTTLE STORAGE (SINGLE)

A quantity of one (1) air bottle compartment, approximately 7.50" wide x 7.50" tall x 26.00" deep, will be provided on the left side forward of the rear wheels. The compartment will be square with angled corners. A painted triangular shaped stainless steel door with a Southco raised trigger C2 chrome lever latch will be provided to contain the air bottle and DEF tank access. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

EXTENSION LADDERS PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.1.1 requires a minimum of one extension ladder.

The extension ladder is not on the apparatus as manufactured. There will be one (1) extension ladder(s) provided and installed by the fire department. The ladder(s) will be a 35' Duo-Safety 1200-A, two (2)-section.

AERIAL EXTENSION LADDERS PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.1.1 requires one (1) extension ladder.

The extension ladder is not on the apparatus as manufactured. There will be one (1) extension ladder(s) provided and installed by the fire department. The ladder(s) will be a 28' Duo-Safety 1200-A, two (2)-section.

ROOF LADDER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.1.1 requires a minimum of one (1) roof ladder.

The roof ladder is not on the apparatus as manufactured. There will be one (1) roof ladder(s) provided and installed by the fire department. The ladder(s) will be a 16' Duo-Safety 875-A.

ADDED ROOF LADDER, PROVIDED BY FIRE DEPARTMENT

There will be two (2) roof ladder provided by the fire department. The ladder(s) will be a 20' Duo-Safety 875-A.

AERIAL FOLDING LADDER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.1.1 requires a minimum of one folding ladder.

The folding ladder is not on the apparatus as manufactured. There will be one (1) folding ladder(s) provided and installed by the fire department. The ladder(s) will be a 10' Duo Safety 585A.

GROUND LADDER STORAGE

The ground ladders are stored within the torque box and are removable from the rear.

Ladders will be enclosed to prevent road dirt and debris from fouling or damaging the ladders.

The ladders rest in full length stainless steel slides and are arranged in such a manner that any one ladder can be removed without having to move or remove any other ladder.

A Gortite rollup door will be provided at the rear, double faced, aluminum construction, and painted one (1) color to match the lower portion of the body.A polished stainless steel lift bar to be provided for the rear roll-up door. The latching mechanism will consist of a full length lift bar lock with latches on the outer extrusion of the door frame.

A stainless plate with a 2-bend flange and a stainless steel hinge will be provided to secure the aerial ladder complement. The plate assembly will be mounted to the bottom of the entrance of the torque box ladder storage area.

When the plate is vertical, it will secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down and not securing the ladders, the rollup door can not close, which will activate the "Open Door Indicator Light" within the cab. The hinged plate will have a positive latching feature that will secure the plate in the vertical position.

GENERATOR STORAGE

Provisions will be made in the compartment below the ladder storage for locating a hydraulic generator.

LADDER STORAGE LIGHTING

There will be 36.00" white 12 volt DC LED strip lights provided to illuminate the torque box ladder storage area and the compartment directly below the ladder storage. One (1) light will be provided on each side of the ladder storage area.

The lights will be activated when the ladder storage compartment door is opened.

NESTED LADDER STORAGE

There will be nested ladders on the left side of the ladder storage compartment. The ladders will be nested so that one ladder can be removed without removing the adjoining ladder.

10' PIKE POLE HOOK

One (1) pike pole will be provided fly section of the ladder. The pole(s) will be Fire Hooks Unlimited 10' Colorado hook(s), with an arson-trash hook on one end and an all-purpose hook on the opposite end with a steel shaft.

PIKE POLES

There will be two (2) 12' Duo Safety pike pole(s) with fiberglass handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

8' PIKE POLE

There will be one (1) Fire Hooks Unlimited, New York Hook , 8' long roof hook with steel shaft and chisel (pry) end provided ladder tunnel.

6 FT PIKE POLE

There will be one (1) Fire Hooks Unlimited NY roof hook RH-6, 6 foot pike pole(s) with steel handles and pry end provided ladder tunnel.

3' PIKE POLE

There will be two (2) 3' Duo Safety pike pole(s) with fiberglass shaft and "D" handles shipped loose.

PIKE POLE STORAGE IN TORQUE BOX/LADDER STORAGE

There will be ABS tubing provided in the torque box/ladder storage area for a total of four (4) pike poles.

If the head of a pike pole can come into contact with a painted surface, a stainless steel scuffplate will be provided.

PIKE POLE STORAGE MODIFICATION

The pike pole storage in the torque box/ladder storage area will be modified to provide non-standard spacing.

MIDSHIP FIRE PUMP

Midship fire pump will be a Waterous S100, 2000 gpm single (1) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharges at the pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure.

- 100% of rated capacity at 165 psi net pump pressure.

-70% of rated capacity at 200 psi net pump pressure.

-50% of rated capacity at 250 psi net pump pressure.

Entire pump and both suction and discharge passages will be hydrostatically tested to a pressure of 600 psi (40.8 bar).

Pump will be fully tested at the pump manufacturer's factory to the performance requirements outlined in the current NFPA 1901 standards and will be free from objectionable pulsation and vibration.

Pump body and related parts will be of fine grain, alloy cast iron with a minimum tensile strength of 30,000 psi (2041.2 bar).

All moving parts in contact with water will be of high quality bronze or stainless steel.

PUMP COMPARTMENT

The pump compartment will be separate from the hose body and compartments so that each may flex independently of the other. The pump compartment will be constructed of the same material as the body compartmentation.

The pump compartment substructure will be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

PUMP MOUNTING

Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

LEFT SIDE PUMP CONTROL PANELS

All pump controls and gauges will be located at the left side of the apparatus and properly identified.

Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding. The linkage from the control rod to the valve will be stainless steel, this will not include the clevis ends of the linkage which will remain anodized steel.

IDENTIFICATION TAGS

The identification tag for each valve control will be recessed in the face of the tee handle.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges will be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

Trim rings will be installed around all inlets and outlets.

MECHANICAL SEAL ON PUMP

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

PUMP TRANSMISSION

Pump transmission will be made of a three (3) piece, high tensile aluminum, horizontally split casing. Power transfer to pump will be through a passive lubricated, Morse HY-VO drive chain.

Drive shafts will be a minimum of 2.35" diameter hardened and ground alloy steel. All shafts will be ball bearing supported. The case will be designed as to eliminate the need for water cooling.

PUMPING MODE

An interlock system will be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system will be designed to allow stationary pumping only.

AIR PUMP SHIFT

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the left side pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

The pump shift will be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab will be illuminated to meet NFPA requirements.

TRANSMISSION LOCK-UP

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control in the cab is activated.

AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be a separate unit. The heat exchanger will be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger will be plumbed to the master drain valve.

INTAKE RELIEF VALVE - PUMP

There will be One (1) Elkhart Style 40 relief valve(s) installed on the suction side of the pump preset at 125 psig.

The relief valve(s) will have a working range of 75 psi to 250 psi.

The outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

The relief valve pressure control will be located behind behind the right side pump panel with a stainless steel access door .

PIERCE PRESSURE CONTROLLER

A Pierce electronic pressure controller will be provided.

A pressure transducer will be installed in the discharge side of the water pump. The transducer continuously monitors pump pressure sending a signal to the electronic pressure controller.

The pressure controller can be used in two (2) modes of operation, RPM mode and pressure modes. The controller will be programmed to turn on/default to Pressure Setting mode.

In the RPM mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow.

A 2.00" diameter throttle control knob with no mechanical stops, a serrated grip, and a red idle push button in the center will be a integrated/part of the pressure controller. The throttle control knob will be programmed for Clockwise rotation to increase engine speed.

Individual LED indicators for ok to pump, throttle ready, pressure mode and rpm mode will be located on the pressure controller for easy viewing.

A pump cavitation protection feature will also provided which will return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.

Other safety features include recognition of low water and no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure controller LCD screen will be 4.20" in size with a minimum brightness of 750 nits. The LCD screen and LED intensity will be automatically adjust for day and nighttime operation. The LCD screen intensity can also be manually adjusted if needed.

The following information will be provided/displayed on the LCD screen -

- Engine RPM
- Check engine and stop engine warning indicators
- Engine oil pressure
- Engine coolant temperature
- Water pump temperature
- Fuel Level

- Water tank level
- Battery voltage
- Operating mode (RPM or pressure)
- Pressure or RPM setting

On screen messaging show diagnostic and warning messages as they occur. It will show apparatus information, stored data, and program options when selected by the operator. It will monitor inputs outputs and support audible and visual warning alarms for the following conditions -

- High battery voltage
- Low battery voltage/engine off
- Low battery voltage/engine running
- High water pump temperature
- Low fuel
- Low engine oil pressure
- High engine coolant temperature
- Water tank out of water (visual alarm only)
- No engine response (visual alarm only)

The pressure controller will store the accumulated operating hours for the pump and engine. These items are to be displayed within the pressure controller menu.

The pressure controller will include a USB port on the back of the controller for easy software upgrades if needed.

PRIMING PUMP

The priming pump will be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control will open the priming valve and start the pump primer. The control will have a three position switch for automatic, off or test. In the sentry mode (automatic) the primer will sense when the pump losses discharge pressure and start the pump primer. The primer will automatically stop once the pump has pressure.

A vacuum gauge will indicate the vertical elevation of water in feet during priming operation.

PUMP MANUALS

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual will cover pump operation, maintenance, and parts.

PLUMBING, STAINLESS STEEL AND HOSE

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless steel couplings. All stainless steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or will be equipped with individual drain valves. All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

MAIN PUMP INLETS

Two (2) 6.00" pump inlets will be provided. One (1) on the left side and One (1) on the right side of the vehicle.

The suction inlets will include removable zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

MAIN PUMP INLET CAP

The main pump inlets will have National Standard Threads with a long handle chrome cap.

The cap will be the Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

SHORT SUCTION TUBE(S)

The suction tube(s) on the water pump will have short suction tube(s) installed to allow for installation of adapters, elbows or intake valves without excessive overhang.

VALVES

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

LEFT SIDE INLET

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

RIGHT SIDE INLET

There will be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

The location of the valve for the two (2) inlets will be recessed behind the pump panel.

INLET CONTROL

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

INLET BLEEDER VALVE

A 0.75" bleeder valve will be provided for each side gated inlet. The valves will be located behind the panel with a swing style handle control extended to the outside of the panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders will be routed below the chassis frame rails.

TANK TO PUMP

The booster tank will be connected to the intake side of the pump with heavy duty piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line will run from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

LEFT SIDE DISCHARGE OUTLETS

There will be Two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

RIGHT SIDE DISCHARGE OUTLETS

There will be One (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

LARGE DIAMETER DISCHARGE OUTLET

There will be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet will be actuated with a small handwheel control at the pump operator's control panel.

An indicator will be provided to show when the valve is in the closed position.

DISCHARGE CAPS/ INLET PLUGS

Chrome plated, rocker lug, caps with chain will be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with chain will be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

The caps and plugs will incorporate a thread design to automatically relieve stored pressure in the line when disconnected.

OUTLET BLEEDER VALVE

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves will be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders will be routed below the chassis frame rails.

LEFT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the left side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

RIGHT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the right side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

LARGE DIAMETER OUTLET ELBOWS

The 4.00" outlet(s) will be furnished with one (1) 4.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

DISCHARGE OUTLET CONTROLS

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve.

If a handwheel control valve is used, the control will be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built in to the center of the handwheel.

Any 3.00 inch or larger discharge valve will be a slow-operating valve in accordance with NFPA 16.7.5.3.

AERIAL OUTLET

The aerial waterway will be plumbed from the pump to the water tower line with 5.00" pipe and a 4.00" Akron valve. The small handwheel control for the waterway valve will be located at the pump operator's panel.

An indicator will be provided to show the position of the valve.

CROSSLAY HOSE BEDS

Three (3) crosslays with 1.50" outlets will be provided.

Two (2) crosslay beds will be capable of carrying 200' of 1.75" Mercedes AquaFlow hose single stacked and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

One (1) crosslay beds will be capable of carrying 200' of 2.00" Mercedes AquaFlow hose single stacked and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

The center crosslay dividers will be fabricated of 0.25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish.

Stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a stainless steel scuffplate.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

CROSSLAY/DEADLAY HOSE RESTRAINT

Elastic netting will be provided across the top and ends of three (3) crosslay/deadlay opening(s) to secure the hose during travel. The netting will be permanently attached at the top center of the crosslay/deadlay bed and removable on each end.

DEADLAY HOSE BEDS

One (1) deadlay bed, without plumbing, will be provided Front crosslay behind cab capable of carrying 100' of 1.75".

The deadlay dividers will be fabricated of .25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a DA finish. The remainder of the hose bed will be painted job color.

Stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a stainless steel scuffplate.

Deadlay bed flooring will consist of removable perforated brushed aluminum.

FOAM SYSTEM

A foam system will not be required on this apparatus.

The following drawing(s) will be provided for approval by the customer. The drawing(s) will be made for up One (01) Truck apparatus and/or similar Pierce job number.

PUMP OPERATOR'S PANEL DRAWING

A detailed drawing to scale of the pump operator's panel will be provided for the customer to review. The drawing will include all of the gauges, controls, switching, etc.., located on the pump operator's panel. The customer will be allowed to make changes and/or mark-ups to this approval drawing. The fire apparatus manufacturer will make revisions (If needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved pump operator's panel drawing will become part of the contract documents.

Due to the way drain(s), bleeder(s), operational/maintenance tag(s) and NFPA required warning tag(s) are placed on pump panel(s), these items will NOT be shown on any pump panel approval drawing(s). These item(s) will be placed on pump panel(s) at the fire apparatus manufacturer discretion.

REMAINING PUMP PANEL(S)

Detailed drawing(s) to scale of the remaining pump panel(s) will be provided for the customer to review. The drawing(s) will include all of the gauges, controls, switching, etc.., located on the pump panel(s). The customer will be allowed to make changes and/or mark-ups to these approval drawing(s). The fire apparatus manufacturer will make revisions (If needed) to the drawing(s) per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved pump panel drawing(s) will become part of the contract documents.

Due to the way drain(s), bleeder(s), operational/maintenance tag(s) and NFPA required warning tag(s) are placed on pump panel(s), these items will NOT be shown on any pump panel approval drawing(s). These item(s) will be placed on pump panel(s) at the fire apparatus manufacturer discretion.

COLOR CODED TAGS

A detailed drawing/chart of the colors used on all of the inlet(s) and outlet(s) will be provided for the customer to review. The customer will be allowed to make changes and/or mark-ups to this approval drawing/chart. The fire apparatus manufacturer will make revisions (If needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved drawing/chart of the colors will become part of the contract documents.

SPECIAL TEXT/VERBIAGE TAGS

A detailed drawing/chart of the text/verbiage used on all of the inlet(s) and outlet(s) will be provided for the customer to review. The customer will be allowed to make changes and/or mark-ups to this approval drawing/chart. The fire apparatus manufacturer will make revisions (If needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved drawing/chart of the text/verbiage will become part of the contract documents.

PUMP PANEL CONFIGURATION

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

PUMP OPERATOR'S PLATFORM

A pull out, flip down platform will be provided at the pump operator's control panel.

The front edge and the top surface of the platform will be made of DA finished aluminum with a Morton Cass insert.

The platform will be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform stepping surface will be 28.00" wide. The platform will lock in the retracted and the extended position.

The platform will be wired to the "step not stowed" indicator in the cab.

PUMP OPERATOR'S PLATFORM PERIMETER LIGHT

There will be an On Scene Solutions, Model Night Stick Access, 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.

PUMP AND GAUGE PANEL

The pump and gauge panels will be constructed of aluminum with a black vinyl finish. A polished aluminum trim molding will be provided around each panel.

The right side pump panel will be removable and fastened with recessed chrome plated lift and turn type fasteners.

PUMP COMPARTMENT LIGHT

There will be one (1) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment.

There will be a switch accessible through a door on the pump panel included with this installation.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

Also provided at the pump panel will be the following:

- Master Pump Drain Control

THROTTLE READY GREEN INDICATOR LIGHT

There will be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

OK TO PUMP INDICATOR LIGHT

There will be a green indicator light installed on the pump operators panel that is activated when the pump is in Ok To Pump mode.

AIR HORN SWITCH

An air horn control switch will be provided at the pump operator's control panel. This switch will be red and properly labeled. The switch will be located within easy reach of the operator in the electrical switch panel.

VACUUM AND PRESSURE GAUGES

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated ©.

The gauges will be a minimum of 4.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They will be marked with a label.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges will be Class 1© interlube filled.

They will be a minimum of 2.00" in diameter and have white faces with black lettering.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges will have a pressure range of 30"-0-400#.

The individual pressure gauge will be installed as close to the outlet control as practical.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

An electric water level gauge will be incorporated in the pressure controller that registers water level by means of 9 LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge will have a warning flash when the tank volume is less than 25%, and will have "Down Chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell.

PUMP PANEL ILLUMINATION

There will two (2) stainless steel light shields installed over the pump operators panels per the following:

- One (1) shield over the left side pump panel
- One (1) shield over the right side pump panel

The shields will include three (3) 12 volt DC lights with white LEDs to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. The outside lights will be activated by the pump panel light switch. The left side center light will be activated when the pump is in "Ok to Pump" mode.

There will be a light activated above the pump panel light switch when the parking brake is applied. This is to afford the operator some illumination when first approaching the control panel.

AIR HORN SYSTEM

There will be two (2) Grover air horns recessed in the front bumper. The horn system will be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve will be installed in-line to prevent loss of air in the air brake system.

Air Horn Location

The air horns will be located on each side of the bumper, inside of the frame rails.

AIR HORN CONTROL

The air horn(s) will be activated by the following:

- Right side foot switch
- Steering wheel horn ring with electric/air horn selector switch

ELECTRONIC SIREN

A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone will be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Electronic siren head will be recessed in the driver side center switch panel.

The electronic siren will be controlled on the siren head only. No horn button or foot switches will be provided.

SPEAKER

There will be one (1) Whelen®, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the center of the front bumper.

AUXILIARY MECHANICAL SIREN

A Federal Q2B® siren will be furnished.

The control solenoid will be powered up after the emergency master switch is activated.

The mechanical siren will be mounted on the front grille, partially recessed. The motor will be mounted behind the front grille and will include a reinforcement plate for mounting.

The mechanical siren will be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.

A momentary rocker switch shall be included in the left side overhead switch panel to activate the siren brake.

There will be a red outline decal around the black rocker switch.

A momentary chrome push button switch will be included in the right side dash panel to activate the siren brake.

FRONT ZONE UPPER WARNING LIGHTS

There will be one (1) 72.00" Whelen Freedom IV LED lightbar mounted on the cab roof.

The lightbar will include the following:

- One (1) red flashing LED module in the driver's side end position.
- One (1) red flashing LED module in the driver's side front corner position.
- One (1) white flashing LED module in the driver's side first front position.
- One (1) red flashing LED module in the driver's side second front position.
- One (1) red flashing LED module in the driver's side third front position.
- One (1) red flashing LED module in the driver's side fourth front position.
- Open in the driver's side fifth front position.
- Open in the driver's side sixth front position.

- Open in the passenger's side sixth front position.
- Open in the passenger's side fifth front position.
- One (1) red flashing LED module in the passenger's side fourth front position.
- One (1) red flashing LED module in the passenger's side third front position.
- One (1) red flashing LED module in the passenger's side second front position.
- One (1) white flashing LED module in the passenger's side first front position.
- One (1) red flashing LED module in the passenger's side front corner position.
- One (1) red flashing LED module in the passenger's side end position.

There will be clear lenses included on the lightbar.

There will be a switch in the cab on the switch panel to control this lightbar.

The white LEDs will be disabled when the parking brake is applied.

The six (6) red flashing LED modules in the front positions may be load managed when the parking brake is applied.

CAB FACE WARNING LIGHTS

There will be four (4) Whelen®, Model M6**, 4.31" high x 6.75" wide x 1.37" deep flashing LED warning lights installed on the cab face, above the headlights in a housing that matches the headlights per the following:

- The left side outside warning light to include red LEDs.
- The left side inside warning light to include red LEDs.
- The right side inside warning light to include red LEDs.
- The right side outside warning light to include red LEDs.
- The warning light lens color(s) to be clear.
- The housing to be polished and the trim shall be chrome.

The lights will be controlled per the following:

- A switch in the cab, on the switch panel will control the lights.
- White LEDs will be deactivated when the parking brake is applied.
- Amber LEDs will be deactivated when the parking brake is released.
- Amber, blue, green or red LEDs in the inside positions may be load managed when the parking brake is applied.

HEADLIGHT FLASHER

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING

There will be four (4) Whelen® Model M6V2**, 4.32" high x 6.75" long x 2.25" deep flashing LED warning and scene lights with chrome trim located in the following positions:

- Two (2) lights, one (1) each side on the bumper extension. The side front lights to be red warning LEDs.
- Two (2) lights, Rear wheel well. The side rear lights to be red warning LEDs.
- The lights will include a the same color as the LED's.

There will be a switch in the cab on the switch panel to control the flashing warning lights.

The scene LEDs will be activated by a switch at the driver's side switch panel.

The scene LEDs may be load managed when the parking brake is applied.

REAR ZONE LOWER LIGHTING

There will be two (2) Whelen®, Model M6*C LED flashing warning lights with chrome trim located at the rear of the apparatus.

- The driver's side rear light to be red
- The passenger's side rear light to be red

The lenses will be clear.

There will be a switch located in the cab on the switch panel to control the lights.

REAR/SIDE ZONE UPPER WARNING LIGHTS

There will be two (2) Whelen®, Model L31H*FN, LED warning beacons provided at the rear of the truck, located one (1) each side. There will be a switch located in the cab on the switch panel to control the beacons.

The color of the lights will be red LEDs with both domes clear.

REAR BODY MOUNTING BRACKET

There will be a 5.00" deep aluminum treadplate bracket provided at the rear of the body, spanning the width of the rear compartment door. The bracket(s) will be provided to mount lights, cameras, or other accessories. The brackets will include a removable panel to protect the wire connections.

TRAFFIC DIRECTING LIGHT

There will be one (1) Whelen®, Model TAL65, 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen, Model TACTL5, control head will be included with this installation.

The controller will be energized when the battery switch is on.

The auxiliary flash not activated.

This traffic directing light shall be surface mounted over the rear door, inside the treadplate box at the rear of the apparatus.

The traffic directing light control head will be located in the driver side overhead switch panel in the right panel position.

ELECTRICAL SYSTEM GENERAL DESIGN FOR ALTERNATING CURRENT

The following guidelines will apply to the 120/240 VAC system installation:

General

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures will conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus will be listed and installed in accordance with the manufacturer's instructions. All products will be used only in the manner for which they have been listed.

Grounding

An equipment grounding means will be provided in accordance with Section 250-62 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) will be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor will be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure will be bonded to the vehicle frame by a copper conductor. This conductor will have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor, properly sized to meet the low voltage and line voltage requirements will be permitted to be used.

Wiring Methods

Fixed wiring systems will be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)

or

- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

Electrical cord or conduit will not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring will be run as follows:

- Separated by a minimum of 12 inches (305 mm), or properly shielded, from exhaust piping

- Separated from fuel lines by a minimum of six (6) inches (152 mm) distance.

Electrical cord or conduit will be supported within six (6) inches (152 mm) of any junction box and at a minimum of every 24 inches (610 mm) of continuous run. Supports will be made of nonmetallic materials or corrosion protected metal. All supports will be of a design that does not cut or abrade the conduit or cable and will be mechanically fastened to the vehicle.

Wiring Identification

All line voltage conductors located in the main panel board will be individually and permanently identified. The identification will reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends will be labeled showing function and wire size.

Wet Locations

All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, will be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location will be not less than 24 inches (610 mm) from the ground. Receptacles on off-road vehicles will be a minimum of 30 inches (762 mm) from the ground.

The face of any wet location receptacle will be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle will be installed in a face up position.

Dry Locations

All receptacles located in a dry location will be of the grounding type. Receptacles will be not less than 30 inches (762 mm) above the interior floor height.

All receptacles will be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they will be so marked.

Listing

All receptacles and electrical inlet devices will be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages will be rated for the appropriate service.

Electrical System Testing

The wiring and associated equipment will be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment will be subjected to a dielectric voltage withstand test of 900 volts for one (1) minute. The test will be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test will be conducted after all body work has been completed.

Electrical polarity verification will be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

GENERATOR

Provisions will be made for the customer installation of a Generator, Honda EM5000, Gas, (4,500W Cont Rat) generator.

GENERATOR LOCATION

The generator will be located to be determined.

GENERATOR START

The starting provision for the generator will be located on the generator itself.

CIRCUIT BREAKER PANEL

A circuit breaker panel will be installed in the LS2. A directory for each breaker will be provided adjacent to the circuit breaker panel. Identification of circuits will be done in a durable manner that provides years of service.

This breaker panel will be connected to Honda EM5000 generator.

ELECTRIC CORD REEL

There will be one (1) Hannay Reels Inc, Model ELFCR1622-14-16 low profile 3-conductor cord reel(s) provided. The motor location will be on the side of the reel for the smallest height and depth.

The exterior finish of the reel(s) will be painted #269 gray from the reel manufacturer.

The reel will be provided with a guarded momentary 12-volt electric rewind switch that is label for its intended use. The switch will be located near the reel at a height not to exceed 72.00 inches above the operators standing position.

A ball stop will be provided to prevent the cord from being wound on the reel.

A label will be provided in a readily visible location adjacent to the reel(s). The label will indicate current rating, current type, phase, voltage and total cable length.

The reel(s) will be installed one (1) reel in the right side over wheel compartment, on the right side of the compartment with a Nylatron® guide.

CORD

Provided for electric distribution will be one (1) length installed on the reel of 200 feet of yellow 10/3 electrical cord, weather resistant 105 degree Celsius to -50 degree Celsius, 600 volt jacketed SOOW

cord. A Hubbell L5-20, 20 amp, 120 volt, twist lock connector body will be installed on the end of the cord.

PORTABLE JUNCTION BOX

There will be one (1) Akron EJBX electric junction box(es) provided.

There will be a cable strain relief and a 1.00' pigtail with black plastic ribbed grip, NEMA L5-20, 20 amp, 120 volt twist lock plug provided for each box.

Each box will be provided with the following:

- four (4) 20 amp 120 volt AC twist lock receptacles with flip up covers
- a 120 volt AC light inside the box

JUNCTION BOX HOLDER

There will be an aluminum junction box holder installed adjacent to the cord reel. A total of one (1) will be mounted at pick-up.

POWER OUTLET STRIP

There will be one (1) receptacle strip(s) with six (6) 20 amp 120 volt AC straight blade receptacles provided mounted behind drivers seat.

The strip(s) selected will be powered from the shoreline inlet through a receptacle located adjacent to the strip(s).

There will be a label installed near the strip(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

120 VOLT RECEPTACLE

There will be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex GFCI receptacle(s) with interior stainless steel wall plate(s), installed LS2 (right side back of compartment wall).. The NEMA configuration for the receptacle(s) will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

AERIAL GENERAL INFORMATION

It is the intent of these specifications to describe a mid-mounted telescoping, elevating platform. The unit will consist of a five (5) section, steel ladder with a self-leveling basket attached to the ladder fly section.

Operation on Grades

The aerial unit will be capable of operating safely, on any slope up to 10 degrees at full capacities. (Operation beyond this limit will be at the operator's discretion).

Construction Standards

The ladder will be constructed to meet all of the requirements as described in the current edition of NFPA 1901.

These capabilities will be established in an unsupported configuration.

All structural load supporting elements of the aerial device that are made of a ductile material will have a design stress of not more than 50 percent of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current NFPA 1901 standard.

All structural load supporting elements of the aerial device that are made of non-ductile material will have a design stress of not more than 20 percent of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current 1901 NFPA standard.

The aerial device will be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.

The aerial device will be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

With the aerial device out of the cradle in the in the fully extended position at zero degrees elevation, a test load will be applied in a horizontal direction normal to the centerline of the ladder. The turntable will not rotate and the ladder will not deflect beyond what the product specification allows.

All welding will be in compliance with the American Welding Society standards. All welding personnel will be certified, as qualified under AWS welding codes.

The aerial device will be capable of operating in either of the two (2) following conditions:

- Conditions of high wind up to 35 mph
- Conditions of icing, up to a coating of 0.25" over the entire aerial structure

All of the design criteria must be supported by the following test data:

- Strain gage testing of the complete aerial device

The following criteria for materials are to be used in the design of the aerial device:

- Materials are to be certified by the mill that manufactured the material
- Material testing that is performed after the mill test will be for verification only and not with the intent of changing the classification.

Ladder Construction

The ladder will be comprised of five (5) sections and will extend to a nominal height, of 100' above the ground, as measured by 1901 recommendations. The ladder (handrails, baserails, trusses, k-braces and rungs) will be constructed of welded, high strength steel certified by the manufacturer as being a minimum of 100,000 lb per square inch of yield strength. All critical points will be reinforced, for extra rigidity, and to provide a high strength-to-weight ratio. Ladder rungs will be round and welded to each section in two (2) places with "K" bracing for torsional rigidity. A minimum of 70.25" of overlap between each of the aerial sections will be provided.

The inside width dimensions of the ladder will be:

Base Section:	56.12"
Lower Mid Section:	46.12"
Center Mid Section:	36.62"
Upper Mid Section:	28.12"
Fly Section:	22.12"

The height of the handrails above the centerline of the rungs will be:

Base Section:	40.72"
Lower Mid Section:	39.08"
Center Mid Section:	32.32"
Upper Mid Section:	29.02"
Fly Section:	26.37"

Vertical Height

The height of the unit will extend to no less than 100', as measured by a plumb line from the top surface of the basket handrail assembly to the ground, with the basket raised to a 77 degree angle.

Horizontal Reach

The rated horizontal reach will be 93'. The measurement of horizontal reach will be consistent with NFPA standards.

Mounting of Elevating Platform

The aerial device will be mid mounted, to a torque box, on the truck chassis.

Torque Box

A "torsion box" subframe will be installed between two sets of stabilizers. The torque box will be constructed of 100,000 lb per square inch yield steel with an integral ladder storage box. The torque box assembly will be capable of withstanding all torsional and horizontal loads when the unit is on the stabilizers. The torque box will be bolted to the chassis frame rails using forty-eight 0.750" SAE grade 8 bolts with nuts.

Turntable

The turntable will be coated with a non-skid, chemical resistant material in the walking areas. The stepping surfaces will meet the skid-resistance requirements in the current NFPA 1901 standard.

The turntable will serve as a step for access to the ladder.

The turntable handrails will be a minimum 42.00" high and will not increase the overall travel height of the vehicle. The handrails will be constructed from 1.62" diameter extruded 6061-T6 aluminum with a slip resistant knurled surface. The handrails will be anodized to resist corrosion.

Elevation System

Two (2) double acting, lift cylinders will be utilized to provide smooth, precise elevation from 15 degrees below horizontal to 77 degrees above horizontal. The lift cylinder will be attached to each side of the base section. The lift cylinders will have a 7.50" internal diameter (bore), 3.50" diameter cylinder rod and a 53.89" stroke. The lift cylinder rod will be chrome plated, to provide smooth operation of the aerial and reduce seal wear. The lift cylinders will be equipped with integral holding valves located in the cylinder, to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves will NOT be located in the transfer tubes.

The elevation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Collision avoidance of the elevation system to prevent accidental body damage
- Automatic deceleration when the aerial device is lowered into the cradle
- Automatic deceleration at the end of stroke, in maximum raise and lower positions
- Deceleration of the aerial device from 0 to -15 degrees

Extension/Retraction System

A hydraulically powered, extension and retraction system will be provided through dual hydraulic cylinders and wire ropes. The extension cylinder will have a 6.50" internal diameter (bore), 2.75" diameter rod and a 53.12" stroke. Each set will be capable of operating the ladder in the event of a failure, of the other. For safety, systems that use only a single extension/retraction system will not be acceptable. The extension cylinder rod will be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders will be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves will NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of seven (7) strands over an inner wire core for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The extension/retraction system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions
- Controls the rate of retraction while flowing water

All sheaves and sheave pins will utilize greasable bronze bushings. Sheave pins will be polished stainless steel.

Rotation System

A 54.00" diameter, external tooth, monorace rotation bearing will be used for the rotation system and will provide 360 degree continuous rotation. The turntable will be bolted to the bearing using 30 SAE grade 8, 0.875" diameter bolts. To secure the bearing to the base support, 36 grade 8, 0.875" diameter bolts will be used. The turntable base and the torque box bearing plate will be machined to fit the bearing, thereby providing even distribution of forces. Two (2) hydraulically driven, planetary gear boxes, with drive speed reducer, will be used to provide infinite and minute rotation control, throughout the entire rotational travel. Each planetary gearbox has a torque rating of 130,000 lb per square inch. A spring applied, hydraulically released, disc type, swing brake will be furnished to provide positive braking of the turntable assembly. Provisions will be made for auxiliary operation of the rotation system should complete loss of normal hydraulic power occur.

The rotation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Envelope control of rotation system to prevent accidental body damage
- Prevent the aerial from being rotated into the short-jacked side of the unit

Manual Override Controls

Manual override controls will be provided for all aerial and stabilizer functions.

Ladder Slide Mechanism

Wear pads will be used between the telescoping ladder sections, to reduce friction for smoother operation. Slide pads will also be used to control side play between the ladder sections.

Basket Leveling System

A basket leveling system will be provided and so designed, that the basket with it's rated load, can be supported and maintained level, relative to the turntable, regardless of the elevation or flexion of the ladder.

The leveling of the basket features a hydraulic cylinder system mounted between the ladder fly section and the basket with each side capable of supporting the load, while maintaining the basket level.

The hydraulic circuitry includes pressure operated counter balance valves, on the load side of the cylinders, to prevent the basket from tipping should the hydraulic lines be severed.

The microprocessor will control the level of the basket during bedding operations, preventing the basket from hitting the body deck when the truck is setup on unlevel ground.

Rotation Interlock

The microprocessor will be used to prevent the rotation of the aerial device, to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor will allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system will also have a manual override, to comply with NFPA 1901.

Load Capacities

The following load capacities will be established with the stabilizers at full horizontal extension and placed in the down position to level the truck and to relieve the weight from the tires and axles. Capacities will be based upon full extension and 360 degree rotation.

A load chart, visible at the operator's station, will be provided. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension.

35 MPH Wind Conditions/Dry

Degree of Elevation	-15 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 77
Basket	1000	1000	1000	1000	1000	1000	1000
Fly	-	-	-	-	250	250	500
Upper Mid	-	-	-	-	250	250	500
Center Mid	-	-	250	250	250	500	500
Lower Mid	-	-	250	250	500	500	500
Base	-	250	500	500	500	500	750

Water Tower Operation

The following capacities will be based upon continuous 360 degree rotation and full extension.

35 MPH Wind Conditions/Water Charged

Degree of Elevation	-15 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 77
Basket	500	500	500	500	500	500	500
Fly	-	-	-	-	-	-	250
Upper Mid	-	-	-	-	-	250	250
Center Mid	-	-	-	-	250	250	500
Lower Mid	-	-	-	250	250	500	500
Base	-	-	250	250	250	500	500

Elevation -15 to 77 Degrees

The aerial device will be able to maintain the above load capacities while flowing up to 1500 GPM and a nozzle position of 0 to 90 degrees to either side of the ladder centerline, and as far above and below horizontal to the platform as nozzle design allows.

The aerial device will be able to maintain the above load capacities while flowing up to 2000 GPM and a nozzle position of 0 to 45 degrees to either side of the ladder centerline, and 30 degrees above horizontal and as far below horizontal to the platform as nozzle design allows.

Reduced loads in the basket can be redistributed in 250 lb Increments to the fly, mid, or base as needed.

Ladder Cradle Interlock System

A ladder cradle interlock system will be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch will be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

TORQUE BOX MODIFIED

The torque box will be modified for slide-out trays.

AERIAL BOOM PANEL

There will be one boom panel provided on each side of the aerial ladder base section. The boom panel will be painted Red #457.

The boom panels will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

AERIAL DEVICE RUNG COVERS

Each rung will be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.

The rung covers will be glued to each rung, and will be easily replaceable should the rung cover become damaged.

The center portion of each rung cover will be black and the outside 2.00" edge at each side will be safety yellow.

Under no circumstances will the rung covers be fastened to the rungs using screws or rivets.

The rung covers will have a 10-year, limited warranty.

STOKES STORAGE BRACKETS

There will be one (1) aluminum bracket(s) at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The brackets will be located above the aerial boom panel. The brackets will be DA finished and include locking pins to secure the basket.

LADDER STORAGE MOUNTING BRACKETS

There will be brackets that are painted to match the aerial device provided near the end of the fly section of the aerial for mounting a roof ladder.

The mounting brackets will accommodate a 14' Duo-Safety 875-A-DR roof ladder as determined by the type of aerial device and the available space.

STABILITY TEST

An aerial stability test will be run on this apparatus using the maximum weight allowance for tip options.

SAW STORAGE BOX

There will be a total of two (2) storage box(es) provided at the base section of the aerial ladder, one (1) on each side of the aerial device. The box(es) will be painted to match the aerial device and located at the tip of the base section. The box(es) will have a hinged cover with pair of rubber draw latches and gas struts to secure the saw. The cover will have the same finish as the box. The cover will be tied in to the open door indicator circuitry when in the open position. The box will have louvers on the side of the box facing the aerial device for ventilation.

The maximum capacity of each box will be 25 lb.

PIKE POLE MOUNTING BRACKETS

Mounting will be provided near the end of the fly section of the aerial ladder for one (1) pike pole(s).

The bracket will be sized to hold a Fire Hooks Unlimited 10' New York roof hook.

BASKET STRUCTURE

The complete basket structure will be constructed of welded high strength steel certified by the manufacturer to have a minimum of 100,000 lb per square inch yield strength on all structural members. The aerial basket will be fully tested and independent third party certified.

The flooring of the basket will be multi-piece Morton Cass material, preventing the accumulation of water on the standing surface. The floor will measure approximately 33.63" long x 72.75" wide. The stepping surfaces will meet the skid-resistance requirements of current NFPA 1901 standard.

The outside basket steps used for transferring in and out of the basket will be at the same level as the basket floor and will be constructed of aluminum treadplate. The steps on the front and sides are approximately 8.00" deep. The front corners of the basket step will be mitered at 45 degrees to allow the basket to be maneuvered closer to buildings when approaching at an angle.

Four (4) stainless steel pompier belt safety loops will be attached to the inside of the basket. Two (2) lifting eyes will be provided on the bottom side of the basket support structure. Each lifting eye will be rated for 500lb.

Four (4) rubber bumpers are provided on the bottom side of the basket structure for damage protection when setting it down on a surface.

The basket interior will be illuminated as required per the current edition of NFPA 1901. Electrical sub-components will be mounted under the basket in a enclosed area providing protection from heat exposure while allowing for easy servicing and maintaining an unobstructed basket interior.

BASKET SIDES

The sides of the basket will be of tubular steel construction and aluminum sheet skin, and along with the basket doors, will form a continuous 42.00" high wall around the basket.

PLATFORM ENTRANCES/EXITS

Two (2) swing-in, spring-loaded, self-closing doors will be of steel frame construction with an aluminum sheet skin and will be provided on the 45 degree angles at the front of the platform. A paddle style door latch will allow the basket doors to be opened from the outside by applying pressure to the paddle with the hand. The rear of the platform will be equipped with a vertical self-closing gate for transfer to and from the platform's ladder device.

ACCESSORY MOUNTING RECEPTACLES

Universal accessory mounting receptacles will be permanently affixed on the left side of the basket to receive options such as the rescue basket holders, rappelling arms, roof ladder brackets, winch, etc. Complete interchangeability will be required without modification to the basket.

HALLIGAN TOOL MOUNTING BRACKETS

Brackets will be provided inside the platform basket for mounting a halligan tool. A total of one (1) sets of brackets will be provided.

AXE MOUNTING BRACKETS

Brackets will be provided in the aerial platform basket for mounting one (1) fire axe(s). The type of axe mounted here will be a pickhead axe. The mounting plates for this installation will be stainless steel.

HOSE BOX AT PLATFORM

There will be one (1) hose storage box(es) with a cover and rubber draw latch provided at the platform. A brushed stainless steel scuffplate will be provided under each latch. The box(es) will be located at the left side of the basket when viewed from the turntable and will match the finish of the aerial device. The box(es) will be sized to fit 100' of 1.75" diameter hose.

Drain holes will be provided in the bottom corners of each box and a louver will be provided on each side near the top of the box, below the latches.

LIGHTS FOR TURNTABLE WALKWAY

There will be On Scene Model 73006-WHW 6.00" long white LED lights and P25 white LED lights provided at the aerial turntable. The lights will be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights will be activated by the aerial master switch.

TURNTABLE CONSOLE LIGHTING

There will be one (1), TecNiq Model E10, white LED light mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights will be activated by the aerial master switch.

TURNTABLE HANDRAILS

The upper handrail to the left of the turntable control console and the lower handrail on the face of the control console will be extruded aluminum.

BASKET HEAT SHIELDS

A heat reflective shield constructed of 0.063 aluminum will be provided on the front, sides, bottom, and access doors of the basket.

The front, side and access door heat shields will be painted to match the aerial basket.

The heat shields on the bottom of the basket will be easily removable for ease of servicing components located under the basket. These heat shields will be provided with a non-glare finish.

INFORMATION CENTER

There will be an information center provided. The information center will operate in temperatures from -40 to 185 degrees Fahrenheit. The information center will employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD will have a 1000 nits rated color display. The LCD will be daylight visible. The LCD display will be encased in an ABS, grey plastic housing with a black decal. There will be five (5), weather-resistant user interface buttons provided. The LCD display can be changed to an optional single foreign language.

Operation

The information center will be designed for easy operation in everyday use. There will be a page button to cycle from one screen to the next screen in a rotating fashion. A video button will allow an NTSC camera signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center will return to the vehicle information screens. There will be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels will be specific to the information being viewed.

General Screen Design

Where possible, background colors will be used to provide vehicle information *At A Glance*. If the information provided on a screen is within acceptable limits, a green background color will be used. If the information provided on a screen is not within acceptable limits, an amber background color will indicate a caution condition and a red background color will indicate a warning condition.

Every screen in the information center will include the aerial tip temperature, the time (12- or 24-hour mode) and a text Alert Center. The time will be synchronized between all Command Zone color displays located on the vehicle. The Alert Center will display text messages for audible alarms. The text messages will identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm will cycle every second until the problems have been resolved. The background for the Alert Center will change to indicate the severity of the warning

message. Amber will indicate a caution condition and red will indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color will be shown for all Alert Center messages.

A label will be provided for each button. The label will indicate the function for each active button for each screen. If the button is not utilized on specific screens, it will have a button label with no text.

Symbols will accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

Page Screens

The Information center will include the following pages:

The Aerial Main and Load Chart page will indicate the following information:

Rungs Aligned and Rungs Not Aligned will be indicated with text and respective green or red colored ladder symbols.

Ladder Elevation will be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.

Water Flow (if applicable) will be indicated via a water nozzle symbol and text indicating flow / time.

Breathing Air Levels will be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graphs shown inside the bottle will indicate oxygen levels above 20 percent. A red bar graph will indicate oxygen levels at or below 20 percent. When oxygen levels are at or below 10 percent the red bar graph will flash.

The Aerial Load Chart will indicate the load limit on each section of the ladder based on actual ladder position and water flow (if applicable).

At A Glance color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Aerial Reach and Hydraulic Systems page will indicate the following information:

Aerial Hydraulic Oil Temperature will be indicated with symbol and text. At a glance features will be utilized.

Aerial Hydraulic Oil Pressure will be indicated with a symbol and text. At a glance features will be utilized.

The following calculations will be indicated on a representative vehicle symbol:

Aerial Device Extension length.

Aerial Device Height indicating the height of the aerial device tip from the ground.

Aerial Device Reach indicating the horizontal distance the aerial reaches from the turntable.

Aerial Device Angle indicating the angle from the vehicle which the device is at.

At A Glance color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Level Vehicle page will indicate the following information:

The grade of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol will tilt dependent on the vehicle grade.

The slope of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol will tilt dependent on the vehicle slope.

Outriggers status will be indicated via a colored symbol for each outrigger present. Each outrigger status will be defined as one of the following:

Outrigger stowed indicated with a silver pan located close to the vehicle

Outrigger fully extended indicated with a fully deployed green outrigger

Outrigger short-jacked indicated by a yellow outrigger partially deployed

Outrigger not set indicated by a red outrigger that is not set on the ground

A text box located on the vehicle symbol will be utilized to identify the overall status of the outrigger leveling system. The following status will be indicated in the text box:

Deployed status will indicate all outriggers are properly set on the ground at full extension

Shortjacked status will indicate one or more outriggers are set on the ground but not fully extended.

Not Set status will indicate one or more outriggers is not properly set on the ground.

Stowed status will indicate all outriggers are stowed for vehicle travel.

A bedding assist alert will indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.

At A Glance color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

Menu Screens

The following screens will be available through the Menu button:

The View System Information screen will display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).

The Set Display Brightness screen will allow brightness increase and decrease and include a default setting button.

The Configure Video Mode screen will allow setting of video contrast, video color and video tint.

The Set Startup screen allows setting of the screen that will be active at vehicle power-up.

The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.

The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence and shows all alarms that are silenced.

The System Diagnostics screen allows the user to view system status for each module and it's respective inputs and outputs. Viewable data will include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.

Aerial calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

LOWER CONTROL STATION

A lower control station with pendant control will be located at the rear of the apparatus in an easily accessible area. The controls and indication labels will be illuminated for nighttime operation. The following items will be furnished at the lower control station and will be clearly identified and conveniently located for ease of operation and viewing:

- Level assist switch
- Override switch to override microprocessor
- Emergency power unit switch

AERIAL DEVICE CONTROL STATIONS

There will be two (2) aerial device control stations, one (1) will be referred to as the basket control station, and the other as the turntable control station. All elevation, extension, and rotation controls will operate from both of these locations. The controls will permit the operator to regulate the speed of the aerial functions, within the safe limits as determined by the manufacturer and NFPA standards. The controls will be clearly marked and illuminated for night time operation.

Each control will be equipped with an operator presence, preventing accidental activation.

TURNTABLE CONTROL STATION

The turntable control station will be located on the right side of the turntable so the operator may easily observe the basket while operating the controls. A console cover will be provided at the turntable control station. The controls will be so designed to allow the turntable control station to immediately override the basket controls even if the ladder is being operated by the basket controls.

The following items will also be provided at the turntable control station and be clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Three (3) separate controls for raise/lower, extend/retract, and left/right rotation
- Intercom controls
- Tip tracking light switch
- Emergency power unit switch
- Operator's load chart
- Two (2) position switch for selecting aerial operational speed
- Aerial monitor switches

BASKET CONTROL STATION

The basket control station will be located at the front, center of the platform basket. The following items will also be provided at the basket control station and be clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Three (3) separate controls for raise/lower, extend/retract, and left/right rotation
- Intercom controls
- Tip tracking light switch
- Basket leveling switches
- Operator's load chart
- Aerial monitor switches

HIGH IDLE

The high idle will be controlled by the microprocessor. The microprocessor will automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system will include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

INTERIOR BASKET ILLUMINATION

There will be three (3) 20.00" weather resistant strip lights with white LEDs and stainless steel shield provided to illuminate the interior of the aerial basket.

- One (1) light over the control console
- One (1) light on the left side rear of the basket
- One (1) light on the right side rear of the basket

The lights will be activated when the battery switch is on and the aerial master switch is on.

STABILIZERS

The vehicle will come equipped with a stabilization system consisting of six (6) hydraulically operated stabilizers. The middle two (2) will be out and down style, the front and rear two (2) will be down only. This system will meet or exceed all requirements of the NFPA specifications related to stabilization and setup on sloped surfaces.

The stabilizer/leveling jacks will have a maximum spread of 18' measured from the centerline of the jack footpads when the beams are fully extended. The beams will be 6.81" wide x 13.00" high with 1.00" thick top and bottom plates and 1/2" thick sides of 100,000-PSI minimum yield strength steel. The cylinders will have pilot-operated check valves with thermal relief designed to ensure that the beams will not drift out of the stowed position during travel. Wear pads will guide the stabilizers.

The horizontal extension cylinders will be totally enclosed within the beams and will incorporate telescoping hydraulic tubing to supply the jack cylinder hydraulic power. Stabilizer hydraulic hoses will remain stationary during operation of the stabilizers to prevent hose wear and potential failure. The cylinders will be equipped with decelerators to reduce the speed of extension and retraction when the beams are near the fully retracted and extended positions. The stabilizer extension hydraulic cylinders will have the following dimensions: 2.25" bore, 1.38" rod, and 62.25" stroke.

The front vertical jack cylinders will be capable of 15.00" ground penetration. The middle and rear vertical jack cylinders will be capable of 18.00" ground penetration.The cylinders will be supplied with pilot operated check valves on each jack cylinder to hold the cylinder in the stowed or working position, should a charged line be severed at any point in the hydraulic system. For safety, the integral holding valves will be located in the cylinder base, NOT in the transfer tube. Vertical jack cylinder rods will be fully enclosed by a telescoping inner box to protect the cylinder rods from damage. The stabilizer jack hydraulic cylinders will have the following dimensions: 4.25" bore, 3.00" rod, and 34.88" stroke.

The middle and rear stabilizer jack will have a pan that will be a maximum of 14.00" wide so as to allow the extension of the stabilizer between parked cars or other obstacles. This pan will serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges will be flanged back 90 degrees for added strength. The front stabilizers will be designed for easy cab tilt.

STABILIZER PADS

The stabilizer footpad will include an integrated stabilizer pad. The footpad will be attached to the jack cylinder rod by means of a machined ball at the end of the jack cylinder rod which mates to a socket machined into the footpad. The footpad will automatically position itself when being stowed so that no portion of the foot extends outside the body.

STABILIZER CONTROLS

A portable stabilizer control pendant will be provided. The control pendant will be weatherproof and oil resistant. Each function and indicator light will be labeled on a mylar lexan panel. The control pendant can be taken as far away as 15' from the vehicle with an attached coil cable.

The stabilizer control pendant will include the following:

- One (1) green power indicator light for stabilizer control that will be illuminated when the Stabilizer Power Enable switch has been activated. This will be interlocked such that the aerial master must be activated, the ladder is in the cradle, or the Global Override at the rear of the apparatus is activated.
- Two (2) electric toggle switches for stabilizers: each toggle switch will control the extend/retract (middle only) and raise/lower (front/middle/rear) of its respective stabilizer to allow vehicle set up in restricted areas and/or on uneven surfaces.
- Level assist switch: The stabilizer control system will incorporate a computerized leveling system to enhance the stabilizer set up. The computerized system will ensure full stabilizer extension, proper jack penetration, and will level the vehicle within eight tenths of a degree of level for safe operation of the aerial device.
- Stow assist switch: The stabilizer control system will incorporate a computerized system to move all six (6) stabilizer shoes to the full raised position while this switch is held.
- Tilt assist toggle switch: The stabilizer control system will incorporate a computerized system to tilt the chassis to five (5) degrees for enhanced side angle deployment of the aerial device.
- One (1) electric push button switch for the engaging the emergency power unit.
- One (1) red "stabilizer not stowed" indicator light: this light will illuminate when the stabilizers are not in the fully stowed position.
- Two (2) fully extended beams green indicator lights: these lights will be illuminated when each of the respective stabilizer beams are fully extended.
- Six (6) firm on ground green indicator lights: each light will be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each toggle switch will activate the engine fast idle automatically.

Manual override will be supplied for each stabilizer control valve.

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move Indicator Light", which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

CRADLE INTERLOCK SYSTEM

A cradle interlock system will be provided, to prevent the lifting of the aerial from the nested position, until the operator has positioned all the stabilizers in a load supporting configuration. A switch will be installed at the cradle, to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

STABILIZER PAN AND TRIM MATERIAL

The aerial stabilizer pans will be polished stainless steel and the aerial stabilizer trim will be polished stainless steel .

STABILIZER CONTROL BOX DOOR

A vertically hinged polished stainless steel door will be provided over the stabilizer control box. The door will be hinged along the inboard edge and provided with a Southco raised trigger C2 chrome latch.

HYDRAULIC SYSTEM

All hose assemblies will be assembled and crimped by the hose manufacturers certified technician.

All manufacturing employees responsible for the installation of hydraulic components will be properly trained. Training will include: proper handling, installation, torque requirements, cleanliness and quality control procedures for hydraulic components.

Hoses used in the aerial hydraulic system will be of a premium quality hose with a high abrasion resistant cover. All pressure hoses will have a working pressure of 4000 psi and a burst pressure rating of 16,000 psi.

All hydraulic fittings and tubing will be plated or constructed of 304 stainless steel to minimize corrosion.

The fitting will use an O-ring seal where possible to minimize hydraulic leaks.

An interlock will be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in the current NFPA 1901 standard.

The system will meet the performance requirement of the current NFPA 1901 standard, which requires adequate cooling less than 2.5 hours of operations.

All hydraulic components that are non-sealing whose failure could result in the movement of the aerial will comply with current NFPA 1901 standards and have burst strength of 4:1.

Dynamic sealing components whose failure could cause aerial movement will have a margin of 2:1 on maximum operating pressure per the current NFPA 1901 standard.

All hydraulic hoses, tubes, and connections will have a minimum burst strength of 3:1 per the current NFPA 1901 standard.

A chassis mounted positive displacement piston pump for consistent pressure and rapid responses will supply hydraulic power for all aerial operations. The positive displacement pump will provide 3,000psi. The hydraulic pump will be solely dedicated to aerial operations.

Each aerial will be evaluated as to the region and climate where it will be used to determine the optimum viscosity and proper oil grade. Oil viscosity will be based on an optimum range of 80 to 1000 SUS during normal aerial use. Before shipment of the unit, an oil sample will be taken and analyzed to confirm the oil is within the allowable ISO grade tolerance.

The aerial hydraulic system will have a minimum oil cleanliness level of ISO 18/15/13 based on the ISO 4406:1999 cleanliness standard. Each customer will receive a certificate of actual cleanliness test results and an explanation of the rating system.

Oil samples can be taken from the hydraulic manifold GP1 port which is also used for verifying system pressure.

Ball valves will be provided in the hydraulic suction lines to permit component servicing without draining the oil reservoir.

The aerial will incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks.

Hydraulic power to the ladder will be transferred from the pedestal by a hydraulic swivel.

The system hydraulic pressure will be displayed on the turntable display.

The hydraulic system will be additionally protected from excessive pressure by a secondary pressure relief valve set at 3,500 psi. In the event the main hydraulic pump compensator malfunctions, the secondary relief will prevent system damage.

HYDRAULIC CYLINDERS

All cylinders used on the aerial device will be produced by a manufacturer that specializes in the manufacture of hydraulic cylinders.

Each cylinder will include integral safety holding cartridges. No manifold or transfer tube mounted cartridge will be acceptable.

Each cylinder will be designed to a minimum safety factor of 4:1 to failure.

All safety holding cartridges will be installed at the cylinder manufacturer, in a controlled clean environment to avoid possible contamination and or failure.

POWER TAKEOFF/HYDRAULIC PUMP

The apparatus will be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift, located inside the cab. The power takeoff which drives the hydraulic pump will meet all the requirements for the aerial unit operations.

An amber indicator light will be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock will be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

The hydraulic system will be supplied by a variable displacement load and pressure compensating piston pump. The pump will meet the demands of all three simultaneous aerial functions. The pump

will provide proper flow for single aerial function with the engine at idle speed. A switch will be provided on the control console to increase the engine speed for multiple function operation.

EMERGENCY PUMP

The hydraulic system will be designed with an auxiliary power unit meeting the guidelines of the current NFPA 1901 standard.

The aerial will be equipped with an emergency hydraulic pump, electrically driven from the truck batteries. The pump will be capable of running for 30 minutes for limited aerial functions to stow the unit in case of a main pump or truck system failure. A momentary switch will be located at the stabilizer and aerial control locations to activate the emergency pump.

AERIAL CONTROL VALVE

The aerial hydraulic control valve will be designed with special spool flows, limiting the oil flow for the designed function speed. The valve will be electrically controlled and be located below the swivel and integrated with the stabilizer control manifold. The handles will be oriented outward and will be spaced 1.80" apart. The valve spools will be designed to bleed off downstream pressure, in the neutral position and allow proper sealing of any cylinder holding cartridge.

OIL RESERVOIR

The oil reservoir will have a minimum capacity of 39 gallons. The oil fill location will be easily accessible and be labeled "Hydraulic Oil Only" and also indicate the grade of oil that is installed in the reservoir. A drain port will be provided.

Two suction ports will be provided, one for the main hydraulic pump and one for the emergency pump. The emergency suction port will be raised slightly off the bottom of the reservoir.

Magnetic filter will be installed in line with the return hose.

A float type sending unit in the reservoir will provide an indication of oil level on an electronic display. A temperature sending unit in the reservoir will provide indication of the oil temperature on an electronic display.

The hydraulic oil reservoir will be labeled per the current edition of NFPA 1901 standard.

RETURN FILTER

The low pressure oil return filter will be remote mounted in the return line and designed to prevent oil loss during filter change. A 50 psi bypass will be included to protect the element and hydraulic system during lower than normal operating temperatures. The system will incorporate the following filter to provide dependable service:

- return filter: beta 1000 at 6 micron

HYDRAULIC SWIVEL

The aerial ladder will be equipped with a three (3) port, high pressure hydraulic swivel which will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

ELECTRIC SWIVEL

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 36 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

WATER SWIVEL

Water will be transferred to the aerial waterway by means of a 5.00" internal diameter waterway, through the swivel, permitting 360 degree continuous rotation.

13-BIT ABSOLUTE ENCODER

The aerial ladder will be equipped with a 13-Bit Absolute Encoder which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 13-Bit Absolute Encoder will be an integral part of a micro-processor based control system.

ELECTRICAL SYSTEM

The aerial device will utilize a microprocessor-based control system. The system will consist of the following components:

- Control System Modules

Each of the control system modules will be configured as follows:

- Sealed to a NEMA 4X rating
- Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)
- Communicate using J1939 data link
- Two (2) diagnostic LED lights
    - One (1) green light that illuminates when module has power (B+) and ground
    - One (1) red light that flashes to indicate the module is capable of communicating via the data link
- Up to 16 diagnostic LEDs on each module
- Ground matrix identification system

The following control system modules will be used:

- Control Module
    - Main controller for the system
    - USB connection allows for computer diagnostics
- Power Module
    - Built-in fault sensing
    - Eight (8) digital outputs
    - Pulse width modulating (PWM) capable
    - 10A continuous per output
    - Circuit protection based on actual current draw (not affected by heat)
- Current Control Module
    - Built-in fault sensing
    - Three (3) analog inputs
    - Eight (8) digital outputs
    - Pulse width modulating (PWM) capable
    - 3A continuous per output
    - Closed Loop System
    - Circuit protection based on actual current draw (not affected by heat)
- Input Module
    - 16 software selectable (digital or analog) inputs
- Output Module
    - 16 digital outputs
- Input/Output Module
    - Eight (8) software selectable (digital or analog) inputs
    - Eight (8) digital outputs
- Valve Module
    - 36 digital inputs
    - 36 digital outputs

TIP LIGHT

There will be one (1) HiViz Model FT-MB-15-*-*, 7,920 raw lumens 12 volt DC lights with white LEDs, part number P-MB-LFOOT-* vertically adjustable mounts and a combination of flood and spot optics installed on the front of the basket. The painted parts of the light housing and brackets to be painted job color.

The lights will be controlled from a switch at the turntable and tip.

TRACKING LIGHTS

There will be two (2) HiViz Model FT-WL-X-9-*-*, 7,200 raw lumens 12 volt DC lights with white LEDs and adjustable bail mounts installed near the tip of the base section of the aerial device. The lights are installed at the tip so the overall width of the apparatus is not affected. The lights will be mounted

below the top edge of the aerial device so the overall height of the apparatus is not affected. The lights will include the following:

- The left side tracking light to include a combination of flood and spot optics
- The right side tracking light to include a combination of flood and spot optics
- The painted parts of the light housing and brackets to be painted job color

The tracking lights will be controlled by a switch located at the platform/tip and turntable.

BASKET ACCESS

Access to the basket will be provided by a pull-out, swing-down climbing ladder. The 2.25" deep climbing ladder surfaces will be constructed with Traction Tread®. The bottom step will be a flip-down, stirrup step. The access ladder will be recessed into the angled corners of the rear body on each side. Hand holds will be provided in each side of the ladder.

The step well finish shall be aluminum treadplate.

All stepping surfaces will have a height not greater than 14.00" from top surface to top surface.

The bottom stepping height will not exceed 24.00" from the ground to the top of the stepping surface at any time.

STEP LIGHTS

There will be two (2) white LED step lights provided for each set of aerial basket access steps.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The step lights will be actuated by the aerial master switch in the cab.

These lights will meet NFPA requirements for step lighting.

STABILIZER WARNING LIGHTS

There will be our (4) Whelen®, Model M6*C, LED flashing warning lights with Whelen, Model M6FC, chrome flanges installed, one (1) on each stabilizer cover panel.

- The front stabilizer pan lights will be red LED with a clear lens
- The rear stabilizer pan lights will be red LED with a clear lens

These warning lights will be activated by the same switch as the side warning lights.

STABILIZER BEAM WARNING LIGHTS

Two (2) 4.00" diameter red LED flashing lights will be mounted on each stabilizer, one (1) facing forward and one (1) facing rearward. The lights will be Grote Supernova 40 series LED lights. The lights will be recessed in the horizontal beam of the stabilizer. These warning lights will be activated with the aerial master switch.

STABILIZER SCENE LIGHTS

There will be one (1) Amdor®, Model AY-LB-12HW012, 190 lumen, 12" long, white LED strip light installed under each stabilizer beam to illuminate the surrounding area. A total of six (6) lights will be installed. The lights will be activated by the aerial master switch.

PLATFORM 120-VOLT ELECTRIC SYSTEM

Two (2), 20 amp, NEMA L5-20, 120-volt, three (3)-prong twist lock receptacles with weatherproof covers will be provided in the aerial platform. Both receptacles will be located on the left side rear of the basket. Each receptacle will be supplied from individual branch circuits protected by dedicated 20 amp/120-volt circuit breakers. All wiring will be sized to and conform to the latest edition of NEC standards.

PLATFORM LIGHTING

There will be two (2) HiViz, Model FT-MB-12-TR-*-*, 6,336 raw lumens 2.06" high x 17.65" long x 2.45" deep DC powered scene light(s) with white LEDs, a combination of flood and spot optics and vertically adjustable mount(s) provided per the following:

- One (1) light to be installed on the left side of the basket under the the step in the center position
- One (1) light to be installed on the right side of the basket under the the step in the center position
- The painted parts of the light housing and brackets to be painted job color.

These light(s) will be switched at the platform/tip and turntable.

The light(s) will be powered through at least one 120 volt AC to 24 volt DC power converter installed in the aerial basket.

The light(s) may be load managed when the parking brake is applied.

3-WAY AERIAL COMMUNICATION SYSTEM

There will be a Fire Research model ICA910 three-way intercom system provided. There will be two (2) control modules located, one (1) at the turntable operator console and one (1) at the pump panel. Each control module will have and an LED volume display and push-button volume control. A hands free module will be located at the aerial tip or platform and constantly transmit to the other module unless the push-to-talk button is pressed.

Each intercom unit will be weatherproof.

AERIAL PEDESTAL

The aerial pedestal will accommodate the height of the cab.

***LYFE*COMBO ™ BRACKETS**

Brackets will be provided to increase the safety of firefighters during fire ground and rescue operations. The removable brackets will have the following three (3) functions: securing a roof ladder to the basket, two (2) rappelling anchor points, and mounting bars to allow the secure mounting of a rescue basket stretcher.

***Lyfe*Ladder™** brackets will be designed to allow firefighter access below the basket using up to a 20' roof ladder. The ladder will be secured through its beams and one (1) rung, by a 1.00" diameter aluminum rod capable of being positively latched in place and able to withstand a minimum of a 500lb load. There will be a latch to keep the ladder in a vertical position at all times. A set of nylon guides will be provided to aid in positioning the roof ladder on the mounting brackets.

Two (2) ***Lyfe*Eye™** rappelling arms will be provided. Forged stainless steel eyebolts with a 1.38" inside diameter will be incorporated into the design of the brackets for use as a rappel line anchor. Each anchor point will have a capacity of 300lb.

***Lyfe*Support™** rescue basket support brackets will be provided to allow patient transport using the aerial. Two (2) quick clip basket straps will be used to secure the basket to the brackets.

Strain gauging and testing will have been completed on the system (ladder and complete holding device) to ensure structural integrity of all components and maintain a minimum of two to one (2:1) safety factor.

AERIAL TURNTABLE MANSAVER™ BAR

A ManSaver™ bar will be installed at the aerial turntable.

AERIAL WATERWAY

The aerial waterway will be capable of being supplied by either a midship mounted pump or an external water source through a 5.00" intake at the side of the apparatus.

A 5.00" water swivel will be installed below the aerial turntable permitting the ladder to rotate 360 degrees continuously.

A 5.00" water swivel will be installed at the aerial heel pivot pin that will permit water tower operations of -15 degrees to 77 degrees. The heel pivot pin will not be integral with the waterway swivel at any point. The waterway design will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

A telescoping aluminum waterway will be installed on the side of the aerial ladder sections. The waterway will consist of a 5.50" diameter tube for the base section, 5.00" diameter tube for the lower mid section, 4.50" diameter tube for the center mid section, 4.00" diameter tube for the upper mid section, and 3.50" diameter tube for the fly section.

A 1.50" drain will be provided for the waterway.

WATERWAY SEALS

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

PLATFORM WATER SYSTEM

A 4.00" (internal diameter) water swivel will connect the fly section waterway to the platform waterway. The water swivel will permit water tower operations from -15 degrees to 77 degrees. The water will be routed from the swivel to a 4.00" gear operated valve(s) on the front of the platform using a combination of 4.00" tubes and piping. The monitor(s) will be bolted onto the valve(s).

A 2.50" preset pressure relief valve will be provided in the waterway system. It will be designed to protect the aerial waterway from excess pressure. It will dump water to the ground when operating.

A shower nozzle rated at 75 gpm will be provided beneath the platform for heat protection for the platform personnel. A direct linkage control for the shower nozzle will be provided.

VALVE UNDER MONITOR

A TFT Valve Under Monitor (VUM) valve and manifold will be provided under each monitor at the aerial platform. Each VUM will be manually controlled at the basket with a handwheel control. The outboard facing port of each VUM will have one (1) gated elbow with 2.50" NH threads. One (1) 1.50" x 2.50" reducer and cap will be provided on the gated elbow. All remaining ports of the VUM will be provided with a blind plug.

An automatic ball drain will be provided on each VUM.

AERIAL MONITOR

There will be two (2) Task Force Tips monitors provided at the platform.

One will be a Y4-MP1A-P-01 double crank controlled monitor with a TFT YST-4NN stacked tips.

The other will be a Y4-EP1A-P electric monitor with a TFT 2000 gpm Model M-ERP2000 electric nozzle.

The controls for the electronic monitor will be located at the platform and the turntable control console.

WATERWAY FLOWMETER

Waterway flow, including total water flowed, will be monitored by the microprocessor. An LCD display will be located at the upper and lower control stations.

WATERWAY INLET

There will be a 5.00" schedule 10 stainless steel inlet pipe on the right side of the apparatus. The inlet will be connected to the base of the ladder, through the turntable swivel, to assure continuous rotation. The inlet will terminate with a 5.00" NST chrome adapter and a long handled chrome cap.

TOOLS

The following tools will be provided for retorquing of all specified bolts as recommended by the manufacturer:

- Torque Wrench
- All Required Extensions, Sockets and Adapters
- 4-to-1 Multiplier

MANUALS

The aerial manufacturer will provide two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device.

INITIAL INSTRUCTION

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) consecutive days.

LOOSE EQUIPMENT

The following equipment will be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2016 edition, section 9.9.3 and 9.9.4 will be provided by the fire department.

- 800 ft (240 m) of 2.50" (65 mm) or larger fire hose, in any combination.
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose, in any combination.
- One (1) handline nozzle, 200 gpm (750 L/min) minimum.
- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
- One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips.
- One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
- One (1) first aid kit.
- Four (4) salvage covers, each a minimum size of 12 ft × 14 ft (3.6 m × 5.5 m).
- Four (4) combination spanner wrenches.
- Two (2) hydrant wrenches.
- One (1) double female 2.50" (65 mm) adapter with National Hose threads.
- One (1) double male 2.50" (65 mm) adapter with National Hose threads.
- One (1) rubber mallet, for use on suction hose connections.
- Four (4) ladder belts meeting the requirements of NFPA 1983.
- One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983.
- One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983.
- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- One (1) automatic external defibrillator (AED).

- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, will be carried mounted in brackets fastened to the apparatus.
- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side will be carried. Any intake connection larger than 3.00" (75 mm) will include a pressure relief device that meets the requirements of 16.6.6.
- If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake will be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters will be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.2.1 requires a minimum of 20' of suction hose or 15' of supply hose will be carried.

Hose is not on the apparatus as manufactured. The fire department will provide suction or supply hose.

STRAINER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.2.1.1 requires a suction strainer when suction hose is provided.

The strainer is not on the apparatus as manufactured. The fire department will provide the suction strainer.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

AERIAL LADDER BELTS

The following ladder belts will be provided:

- no small/medium belts
- two (2) large/extra large belts for 34"-42" waist
- one (1) XXL belt for 42"-50" waist

FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PAINT

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body will be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces will be removed and sanded to a smooth finish. Exterior seams will be sealed before painting. Exterior surfaces that will not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.
2. Chemical Cleaning and Pretreatment - All surfaces will be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces will be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces will be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion.
3. Surfacer Primer - The Surfacer Primer will be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer will be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.

6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat will be applied. The Basecoat will be applied to a thickness that will achieve the proper color match. The Basecoat will be used in conjunction with a urethane clear coat to provide protection from the environment.
7. Clear Coat - Two (2) coats of Clear Coat will be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors will be Clear Coated to match the body. Paint warranty for the roll-up doors will be provided by the roll-up door manufacturer.

After the cab and body are painted, the color will be verified to make sure that it matches the color standard. Electronic color measuring equipment will be used to compare the color sample to the color standard entered into the computer. Color specifications will be used to determine the color match. A Delta E reading will be used to determine a good color match within each family color.

All removable items such as brackets, compartment doors, door hinges, and trim will be removed and painted separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly will be finish painted before assembly.

The paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) are to meet or exceed Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels are to meet or exceed the #6 A.C.T.standard in critical areas. These requirements must be met in order for the exterior paint finish to be considered acceptable. The manufacture's written paint standards will be available upon request.

PAINT - ENVIRONMENTAL IMPACT

Contractor will meet or exceed all current state regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations will have a 99.99% efficiency factor.
- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter is used, it will have an efficiency rating of 98.00%. Water wash systems will be 99.97% efficient
- Water from water wash booths will be reused. Solids will be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers will be recycled to recover the metal.
- Solvents used in clean-up operations will be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his state EPA rules and regulations.

CAB PAINT

The cab will be painted PPG #4154 Red #457.

BODY PAINT

The body will be painted to match the lower section of the cab.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly will be finished with a single system black top coat before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Steel fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.

PAINT, FRONT WHEELS

All wheel surfaces, inside and outside, will be provided with powder coat paint #101 black.

PAINT, REAR WHEELS

All wheel surfaces, inside and outside, will be provided with powder coat paint #101 black.

AXLE HUB PAINT

All axle hubs will be painted black #101.

COMPARTMENT INTERIOR PAINT

The interior of all compartments will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

AERIAL DEVICE PAINT COLOR

The aerial device paint procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the aerial device structural components above the rotation point will be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting.

2. Zinc Rich Primer - Zinc rich primer will be applied to the torque box and stabilizers.

3. Primer/Surfacer Coats - A two (2) component epoxy primer/surfacer will be applied to the mechanically shot-blasted metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams will be caulked with a two (2) component epoxy caulk before painting.

4. Hand Sanding - The primer/surfacer coat of the outer surfaces of the hand rails and base rails will be lightly sanded to a smooth finish.

5. Primer Coat - A two (2) component epoxy primer coat will be applied over the sanded primer.

6. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.

7. Clear Coat - Two (2) coats of an automotive grade two (2) component urethane will be applied.

Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Removable items such as brackets will be removed and painted separately to ensure paint coverage behind all mounted items.

The aerial device components will be painted as follows using the aforementioned seven (7) step finishing process:

- Aerial basket and basket leveling cylinders at tip: white 10
- Aerial device ladder sections and extension cylinders: slate gray metallic 225

- Aerial turntable and leveling cylinders (if applicable) at turntable: white 10
- Aerial control console: white 10
- Aerial lift cylinders: white 10
- Aerial rotation motor (if applicable): black
- Aerial torque box, support structure and components below the rotation point: gloss black primer
- Aerial stabilizers (middle and rear only): black 101
- Aerial boom support: gloss black primer

REFLECTIVE STRIPES

Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will consist of a 1.00" white stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" white stripe on the bottom.

The reflective band provided on the cab face will be at the headlight level.

REAR CHEVRON STRIPING

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces will include the rear wall and aluminum doors. Rear compartment doors, stainless steel access doors, and the rear bumper will not be covered.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface will be covered with chevron striping.

REFLECTIVE STRIPE ON STABILIZERS

There will be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

STRIPE, REFLECTIVE, "S" RIBBON

"S" type ribbon(s) will be added to the reflective stripe each side of the vehicle. Areas adjacent to the "S" portion of the stripe will be shaded and highlighted with an air brush to give it a ribbon affect. There will be one (1) pair on the vehicle.

CAB DOOR REFLECTIVE STRIPE

A 6.00" x 16.00" white reflective stripe will be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

This stripe will meet the NFPA 1901 requirement.

LETTERING

The lettering will be totally encapsulated between two (2) layers of clear vinyl.

LETTERING

Forty-one (41) to sixty (60) genuine gold leaf lettering, 3.00" high, with outline and shade will be provided.

FIRE APPARATUS PARTS MANUAL

There will be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided.

The manual(s) will contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

Each manual will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

Service Parts Internet Site

The service parts information included in these manuals are also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

CHASSIS SERVICE MANUALS

There will be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit.

The manual will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

CHASSIS OPERATION MANUAL
The chassis operation manual will be provided on one (1) USB flash drive.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

ENGINE WARRANTY
A Cummins **five (5) year** limited engine warranty will be provided. A limited warranty certificate, WA0181, is included with this proposal.

STEERING GEAR WARRANTY
A Sheppard **three (3) year** limited steering gear warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FIFTY (50) YEAR STRUCTURAL INTEGRITY
The Pierce custom chassis frame limited warranty certificate, WA0013, is included with this proposal.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

REAR AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
Pierce TAK-4® independent rear suspension will be provided with a three (3) year material and workmanship limited warranty. The manufacturer's warranty will provide that the independent rear suspension be free from any defect related to material and workmanship on the portion of the apparatus built by the manufacturer that would arise under normal use and service.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor Wabco™ ABS brake system limited warranty certificate, WA0232, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY
The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP
The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

CAMERA SYSTEM WARRANTY
A Pierce fifty four (54) month warranty will be provided for the camera system**.**

COMPARTMENT LIGHT WARRANTY

The Pierce 12 volt DC LED strip lights limited warranty certificate, WA0203, is included with this proposal.

TRANSMISSION WARRANTY

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

TRANSMISSION COOLER WARRANTY

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed $10,000 per occurrence. A copy of the warranty certificate will be submitted with the bid package.

WATER TANK WARRANTY

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

A Gortite roll-up door limited warranty will be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty will be provided on painted and satin roll up doors.

The limited warranty certificate, WA0190, is included with this proposal.

PUMP WARRANTY

The Waterous pump will be provided with a Seven (7) year material and workmanship limited warranty.

A copy of the warranty certificate will be submitted with the bid package (no exception).

TEN (10) YEAR PUMP PLUMBING WARRANTY

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY

The Pierce device limited warranty certificate, WA0052, is included with this proposal.

AERIAL SWIVEL WARRANTY

An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

HYDRAULIC SYSTEM COMPONENTS WARRANTY

Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

HYDRAULIC SEAL WARRANTY

Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.

A copy of the warranty certificates will be submitted with the bid package.

AERIAL WATERWAY WARRANTY

An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FOUR (4) YEAR PRO-RATED PAINT AND CORROSION

A Pierce aerial device limited pro-rated paint warranty certificate, WA0047, is included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

THREE (3) YEAR MATERIAL AND WORKMANSHIP

The Pierce Goldstar gold leaf lamination limited warranty limited warranty certificate, WA0018, is included with this proposal.

VEHICLE STABILITY CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of delivery.

POWER STEERING CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer will provide a cab crash test certification with this proposal. The certification states that the cab must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks
- Roof Crush
    - The cab will be subjected to a roof crush force of 100,000 lb. This value will be 450 percent of the ECE 29 criteria, which must be equivalent to the front axle rating up to a maximum of ten (10) metric tons.
- Side Impact
    - The cab will be subjected to dynamic preload with a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of energy. This test will closely represent the forces a cab will see in a rollover incident.
- Frontal Impact
    - The cab will withstand a frontal force produced from 65,200 ft-lb of energy using a swing-bob type platen.

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

There will be no exception to any portion of the cab integrity certification. Nonconformance will lead to immediate rejection of bid.

CAB DOOR DURABILITY CERTIFICATION

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

SEAT BELT ANCHOR STRENGTH

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

AMP DRAW REPORT

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which will include the following:
    - The nameplate rating of the alternator.
    - The alternator rating under the conditions specified per:
        - Applicable NFPA 1901 or 1906 (Current Edition).
    - The minimum continuous load of each component that is specified per:
        - Applicable NFPA 1901 or 1906 (Current Edition).
    - Additional loads that, when added to the minimum continuous load, determine the total connected load.
    - Each individual intermittent load.

All of the above listed items will be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

ATTACHMENT 4B

FINANCIAL SOLUTIONS

PNC EQUIPMENT FINANCE

Tax Exempt Lease Purchase

SALES ORGANIZATION:	**South Coast - Tim O**	11/18/2021
LESSEE:	Big Bear Fire	Contact information:
TYPE OF EQUIPMENT:	One (1) Pierce 100' Mid - mount tower and Boise Mobile	Kim Simon
AMOUNT TO FINANCE:	$1,600,000.00	Locator: B4-B230-06-07
CUSTOMER DOWNPAYMENT:	$0.00	155 East Broad St
TRADE-IN:	$0.00	Columbus, OH 43215
DELIVERY TIME:	Standard delivery	Ph: (800) 820-9041 ext. 1
PAYMENT MODE:	Annual In Arrears	Fax:(866) 852-3101
FIRST PAYMENT DUE DATE:	1 year after lease commencement	Kim.simon@pnc.com
LEASE COMMENCEMENT DATE:	Upon contract signing with Pierce	

Term	5 years	7 years	10 years
Number of Payments	5 Annual	7 Annual	10 Annual
Payment Amount	$ 342,315.76	$ 253,818.17	$ 189,777.07
Interest Rate:	2.29%	2.69%	3.23%

NOTE: All lease documents must be fully executed within 7 days of the date of this proposal. Failure to receive completed documents may alter the final payment schedule due to changes in rates and/or discounts.

PERFORMANCE BOND: To utilize the prepay program, a performance bond is required. Said performance bond shall be paid for directly to Pierce Manufacturing or financed by PNC Equipment Finance as part of the transaction

ESCROW FUNDING OPTION: At lease closing, if all of the equipment has not yet been delivered, Lessor will fund an escrow account from which disbursements will be made to the equipment provider(s) upon receipt of a Requisition Request and Certificate of Acceptance from Lessee. Escrow agent will either be Lessor or third-party provider selected by Lessor and approved by Lessee. All escrow earnings will be for the benefit of Lessee. The escrow agent will assess a $250.00 account set up fee payable at closing.
TYPE OF FINANCING: Tax-exempt Lease Purchase Agreement with a $1.00 buy out option at end of lease term. Said agreement shall be a net lease arrangement whereby lessee is responsible for all costs of operation, maintenance, insurance, and taxes.
BANK QUALIFICATION: This proposal assumes that the lessee will not be issuing more than $10 million in tax-exempt debt this calendar year. Furthermore, it is assumed that the lessee will designate this issue as a qualified tax-exempt obligation per the tax act of 1986.
LEGAL TITLE: Legal title to the equipment during the lease term shall vest in the lessee, with PNC Equipment Finance perfecting a first security interest
AUTHORIZED SIGNORS: The lessee's governing board shall provide PNC Equipment Finance with its resolution or ordinance authorizing this agreement and shall designate the individual(s) to execute all necessary documents used therein.
LEGAL OPINION: The lessee's counsel shall furnish PNC Equipment Finance with an opinion covering this transaction and the documents used herein. This opinion shall be in a form and substance satisfactory to PNC Equipment Finance.
VOLUNTEER FIRE DEPARTMENTS: If Lessee is a Volunteer Fire Department, a public hearing under the requirements of Section 147(f) of the Internal Revenue Code of 1986 shall be conducted to authorize this transaction. It is recommended that a notice of the public hearing be published 10 to 14 days in advance of the public hearing.
This proposal will be valid for **Seven Days (7)** from the above date and is subject to final credit approval by PNC Equipment Finance and approval of the lease documents in PNC Equipment Finance's sole discretion. To render a credit decision, lessee shall provide PNC Equipment Finance with their most recent three years' audited financial statements, copy of their most recent interim financial statement, and current budget.

Accepted by:_____ Proposal submitted by Kim Simon

FIRE ENGINE PURCHASE AGREEMENT
BY AND BETWEEN
THE BIG BEAR FIRE AUTHORITY
AND SOUTH COAST FIRE EQUIPMENT

This Purchase Agreement ("Agreement") dated as of _____, 2021, ("Effective Date") is made by and between the Big Bear Fire Authority ("Authority"), a California Joint Powers Authority, and South Coast Fire Equipment ("Seller").

AGREEMENT

1. Purchase and Sale.

1.1 Sale and Price. Seller agrees to sell to the Authority and the Authority agrees to purchase one (1 **Pierce® 100' Heavy Duty Aerial Tower** ("Tower") per the **Scope of Work** attached hereto and incorporated herein as Exhibit "A" entitled **Arrow XT Mid Mount Tower Bid Spec(9/9/21)** and per the **Specifications** referred to as Exhibit "B." The total purchase price for the Pumper is One Million, Five Hundred Twelve Thousand, Eight Hundred Six Dollars and Forty-Two Cents $1,512,806.42 ("Purchase Price") as shown in Attachment "A."

1.2 Payment and Transfer of Ownership. The Purchase Price shall be paid by the Authority within thirty (30) days of the delivery and acceptance of the Tower following the time period established for the Authority's Inspection as set forth below ("Time of Purchase"). At the Time of Purchase, title to the Tower shall pass to the Authority as evidenced by the Seller's delivery to Authority of an executed copy of the Certificate of Ownership attached hereto as Exhibit "B."

1.3 Delivery. Seller shall deliver the Tower in new condition, all transportation charges prepaid, subject to the approval of the Authority pursuant to the Authority's Inspection described herein, at a location designated by the Authority, in Big Bear Lake, California, within 450-510 days of the Execution Date or at such other time as the parties mutually agreed upon. All costs for delivery, drayage, freight, insurance and for the packaging of the Tower are to be borne by Seller. Should there be, at any time, a decrease in price of the Pumper; a corresponding decrease will be made in the prices quoted. Seller shall notify the Authority by letter in the event of any such decline in prices. All material furnished will be subject to inspection and approval of the Authority upon delivery.

2. Liquidated Damages.

2.1 All time limits stated in this Agreement shall be in calendar days. Should delivery not be completed on or before the time stipulated herein, it is mutually agreed and understood by and between the Authority and Seller that:

2.1.1 A delay could seriously affect the public and the operation of the Authority's Fire Department.

2.1.2 It is, impractical and extremely difficult to determine the actual damage, which the Authority will sustain by reason of such delay.

2.1.3 There will be a reduction in the Purchase Price in the amount of one hundred dollars ($100) per calendar day for exceeding the delivery time set forth in this Agreement. This is the nearest measure of damages for such delay that can be fixed at this time.

2.2 The Authority and Seller hereby establish said reduction in the Purchase Price of one hundred dollars ($100) per calendar day for each and every day of delay for the Tower as liquidated damages and as a penalty or forfeiture for breach of Agreement to complete delivery by Seller on or before the time specified in this Agreement. Liquidated damages shall run for a period not to exceed ninety (90) days. At such date, the Authority reserves the right to cancel the order and pursue any and all remedies available by law or equity.

2.3 Should Seller be obstructed or delayed in the work required to be done hereunder by changes in the work or by any default, act, or omission of the Authority, or by strikes, fire, or act of God, then the time for delivery shall be extended for period as may be agreed upon by the Authority and Seller.

3. Conditions of Sale. The Authority's obligation to purchase the Tower and Seller's obligation to sell the Pumper pursuant to this Agreement are conditioned on each of the following:

3.1 Authority's Inspection. Authority shall have twenty (20) days from the date of delivery to inspect the Tower for its suitability and feasibility for Authority's intended use ("Authority's Inspection"). The Authority shall perform the pumping system tests, which shall comply with the latest addition of NFPA 1901. Upon delivery, Authority shall conduct a final visual inspection of the Tower to ensure the acceptability of the Tower to the Authority. The Tower will be given a complete inspection by the Authority prior to any road, aerial or pumping tests. Within the twenty (20) days allocated for Authority's Inspection, the Authority may provide Seller with a list of defects, if any, for correction within thirty (30) days or as otherwise agreed upon by the parties. The Tower will be re-inspected each time it is returned until all defects are corrected. Authority's investigation shall include, but not be limited to (a) investigations or analyses of applicable laws, statutes, rules, regulations, ordinances, limitations, restrictions, or requirements concerning the use, location, or suitability of the Tower or condition thereof; (b) the extent or condition of title to the Tower; and (c) all other matters concerning the condition, use, or sale of the Tower. The Authority may reject and return at the risk and expense of Seller the Tower, which may be defective or fail to comply with the Specifications. If rejected, the Tower will be held for disposition at the expense of Seller.

3.2 Title. Authority's obligation to purchase the Tower and Seller's obligation to sell the Tower pursuant to this Agreement are conditioned on the conveyance to Authority of good and marketable title to the Tower not subject to any liens or encumbrances. At the Time of Purchase, title to the Pumper shall pass to the Authority as evidenced by the Seller's delivery to Authority of an executed copy of the Certificate of Ownership attached hereto as Exhibit "C."

3.3 Representations and Warranties. Seller and Authority shall each have duly performed each and every material undertaking, and agreement required to be performed by them hereunder prior to the Time of Purchase and their representations and warranties to each other set forth in this Agreement shall be true and correct in all material respects at and as of the Time of Purchase.

3.4 Items to be Delivered at Time of Purchase. Seller shall execute and/or deliver, at Time of Purchase, the following:

3.4.1 Documents: Any and all documents related to or necessary for the Authority's purchase and use of the Tower including but not limited any applicable warranty information, operations and maintenance manuals, owner's manuals, or assembly instructions in the Seller's possession. A sales slip and weight slip showing the front axle, rear axles, and total vehicle weight shall also accompany the Tower when delivered.

3.4.2 Certification of Representations and Warranties. Seller shall certify in writing the truth and accuracy of its representations and warranties in all material respects as of the Time of Purchase. Each certification may be satisfied by execution and delivering the Certificate of Ownership attached hereto as Exhibit "C."

3.4.3 Certificate of Ownership. Seller shall deliver to Authority the Certificate of Ownership as attached hereto as Exhibit "C."

3.5 Failure or Change of Conditions. Should any of Seller's or Authority's Conditions of Sale specified in this Agreement fail to occur or materially change prior to the date established herein for the Time of Purchase, Authority shall have the power, exercisable by giving written notice to the Seller, to waive the condition or terminate this Agreement as described herein.

3.6 Termination. This Agreement may be terminated at any time by the Authority upon written notice by the Authority to the Seller, if the Authority does not approve of the condition of the Tower during either the Authority's Inspection or prior to the Authority's Final Acceptance. Either party may terminate this Agreement in the event of a material breach of this Agreement and a failure to cure such breach within fifteen (15) days of written notice of such breach.

3.7 Effect of Termination. In the event this Agreement is terminated after delivery of Tower but before Time of Purchase, the cost of returning the delivered Pumper to Seller shall be borne by the party responsible for the event or nonevent leading to the termination.

4. Final Representations and Warranties.

4.1 Representations and Warranties of Seller. In addition to any other express agreements of Seller contained herein, the matters set forth in this Section constitute representations and warranties by Seller which shall be true and correct in all material respects as of the Time of Purchase (regardless of any investigations Authority shall have made with respect thereto prior to Time of Purchase).

4.1.1 Enforceability. Seller is a California Joint Powers Authority, validly existing and in good standing under the laws of the State of California; this Agreement and all documents executed by Seller which are to be delivered to Authority at the Time of Purchase are or at the time of Time of Purchase will be duly authorized, executed, and delivered by Seller, are or at the time of Time of Purchase will be legal, valid, and binding obligations of Seller, are and at the time of Time of Purchase will be sufficient to convey title (if they purport to do so), and do not and at the time of Time of Purchase will not violate any provisions of any agreement or judicial order to which Seller is a party or to which Seller or the Tower is subject. No other authorizations or approval whether of Governmental Agencies or otherwise, will be necessary in order to enable Authority to enter into or comply with the terms of this Agreement. Seller hereby further represents and warrants that the parties signing this Agreement on behalf of Seller have full power and authority to do so and to fully bind Seller hereunder.

4.1.2 Compliance with Laws. Seller's ownership, use, and operation of the Tower have been and are in compliance with all applicable state, federal and local statutes, ordinance, orders, requirements, laws, or regulations (including, without limitation, building, zoning, and environmental laws) affecting the Tower.

4.1.3 Encumbrances. The Tower is not subject to any liabilities, liens, or encumbrances and there is no pending or threatened litigation or administrative proceedings affecting the Tower or this Agreement.

4.1.4 Possession. No leases, licenses, or other agreements allowing any third-party rights to use the Tower are or will be in force.

4.1.5 Disclosures. Seller has disclosed to Authority any and all facts known to Seller, its agents or representatives that are material to the use of the Tower by Authority and the transactions contemplated by this Agreement.

4.1.6 Binding Effect of Documents. This Agreement and the other documents to be executed by Seller hereunder, upon execution and delivery thereof by Seller, will have been duly entered into by Seller, and will constitute legal, valid and binding obligations of Seller. Neither this Agreement nor anything required to be done under this Agreement violates or shall violate any contract, document, understanding, agreement or instrument to which Seller is a party or by which it is bound.

4.1.7 No Other Agreements. Seller has not entered into any contract for the sale of the Tower or for the lease of substantially all of the Tower, nor do there exist any rights of first refusal or options to purchase the Pumper or lease substantially all of the Tower.

4.1.8 No Insolvency Proceedings. Seller has not (i) made a general assignment for the benefit of creditors; (ii) filed any voluntary petition in bankruptcy or suffered the filing of any involuntary petition by its creditors; (iii) suffered the appointment of a receiver to take possession of all or substantially all of

its assets; (iv) suffered the attachment or other judicial seizure of substantially all of its assets; or (v) admitted in writing its inability to pay its debts as they come due.

5. Enforceability. This Agreement constitutes a valid and binding agreement of the Authority, enforceable in accordance with its terms.

6. Survival of Representations and Warranties; Hold Harmless. All of the representations and warranties of Authority and Seller made in conjunction with and pursuant to this Agreement shall survive the Time of Purchase. Seller agrees to indemnify, defend, protect and hold Authority harmless from any claim, demand, liability, loss, or cost (including reasonable attorneys' fees) that Authority may sustain arising out of any breach of or inaccuracy in Seller's representations and warranties. Authority agrees to indemnify, defend, protect, and hold Seller harmless from any claim, demand, liability, loss, or cost (including reasonable attorneys' fees) that Seller may sustain arising out of any breach of or inaccuracy in Authority's representations and warranties.

7. Best Efforts. Authority and Seller shall act in good faith and use their best efforts after the date hereof to ensure that their respective obligations hereunder are fully and punctually performed. Authority and Seller shall perform any further acts and execute and deliver any other documents or instruments that may be reasonably necessary to carry out the provisions of this Agreement.

8. Notices. All notices and demands of any kind that either party may be required or desires to serve upon the other party shall be in writing and shall be served upon such other party by personal service or by mailing a copy thereof, certified or registered mail, postage prepaid, addressed as follows:

If to Authority:

Big Bear Fire Authority
41090 Big Bear Boulevard
P.O. Box 2830
Big Bear Lake, CA 92315
Attn: Fire Chief

If to Seller:

_____
_____
_____
Attn: _____

Service shall be deemed complete on the date of actual delivery as shown on the addressee's return receipt. The addresses to which notices and demands shall be delivered or sent may be changed from time to time by notice to the other party.

9. Assignment. Neither Seller nor Authority may assign its rights under this Agreement without the prior written consent of the other party.

10. Successors and Assigns. Subject to the restrictions and prohibitions on assignment set forth above, each and all of the covenants and conditions of this Agreement shall inure to the benefit of and shall be binding upon the successors-in-interest, assigns, and legal representatives of the parties hereto. As used in the foregoing, "successors" shall refer to the parties' interest in the Tower and to the successors to all or substantially all of their assets and to their successors by merger or consolidation.

11. Agreement Survives Time of Purchase. All obligations referred to or required to be performed at a time or times after the Time of Purchase shall survive the Time of Purchase.

12. Binding Effect. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, successors and assigns.

13. Time is of the Essence. Time is of the essence in this Agreement.

14. Severability. If any term or provision of this Agreement shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement shall not be affected, so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner adverse to either Party. Upon such determination that any term or provision illegal or incapable of being enforced, the Parties hereto shall negotiate in good faith to modify this Agreement so as to affect the original intent of the Parties as closely as possible in an acceptable manner to the end that transactions contemplated hereby are fulfilled to the greatest extent possible.

15. Entire Agreement. This Agreement constitutes the sole and only Agreement between Authority and Seller concerning the Tower and their rights and duties in connection with the Pumper. Any prior or other agreements or representations between Authority and Seller regarding those matters are null and void unless expressly set forth in this Agreement.

16. Modification. No modification, waiver, amendment, discharge or change of this Agreement shall be valid unless the same is in writing and signed by the party against which the enforcement of such modification, waiver, amendment, discharge, or change is or may be sought.

17. Waiver. No waiver by Authority or Seller of a breach of any of the terms, covenants or conditions of this Agreement by the other party shall be construed or held to be a waiver of any succeeding or preceding breach of the same or any other term, covenant or condition herein contained. No waiver of any default by Authority or Seller hereunder shall be implied from any omission by the other party to take any action on account of such default if such default persists or is repeated, and no express waiver shall affect a default other than as specified in such waiver. The consent or approval by Authority or Seller to or of any act by the other party requiring the consent or approval of the first party shall not be deemed to waive or render unnecessary such party's consent or approval to or of any subsequent similar acts by the other party.

18. Governing Law and Venue. This Agreement shall be construed in accordance with and governed by the laws of the State of California. If any legal or administrative action is brought to interpret any provision of this Agreement, such action shall be brought in San Bernardino County, California.

19. Attorneys' Fees. If any party to this Agreement commences an action against another party to this Agreement, either legal, administrative, or otherwise, arising out of or in connection with this Agreement, the prevailing party in such litigation shall be entitled to have and recover from the losing party reasonable attorney's fees, expert fees, and all other costs of such action.

20. Counterparts. This Agreement may be executed in counterparts and all counterparts so executed shall constitute one agreement binding on all the parties hereto. It shall not be necessary for each party to execute the same counterpart hereof.

BIG BEAR FIRE AUTHORITY

By: _____

Name: Jeff Willis

Title: Fire Chief

Date: _____

SOUTH COAST FIRE EQUIPMENT

By: _____

Name: _____

Title: _____

Date: _____

EXHIBITS:
A – Scope of Work
B – Specifications
C – Certificate of Ownership and Transfer of Title

EXHIBIT "B"
SPECIFICATIONS

1. Conformance. The Tower shall conform to the recommendations of the latest addition of the National Fire Protection Association (NFPA) 1901 Standard for Automotive Fire Apparatus unless otherwise stated in the specifications. The Tower shall comply in every respect with the latest editions of the Vehicle Administrative codes of the State of California, Federal Motor Vehicle Safety Standards, and provisions of the Occupational Safety and Health Act.

2. Road Performance Tests.

   2.1 General. The road performance tests shall be conducted with the Tower loaded to its maximum GVWR simulating a full complement of hose, personnel, tools, 300 gallons of water, and full DEF and fuel tanks. It will be the manufacturer's responsibility to provide a certified weight certificate at time of the test.

   2.2 Acceleration and Braking. Acceleration and Braking performance shall be at the requirements listed in NFPA 1901.

   2.3 Top Speed. The Tower shall be capable of obtaining and sustaining a top speed of 60 mph on a level paved surface with the engine not exceeding its governed speed/RPM.

3. Grade Ability. The Tower shall be capable of ascending a twenty percent (20%) grade at a speed of not less than twenty-five miles per hour (25 mph).

4. Turn Ability. The Tower shall be capable of executing both left and right turns with a vehicle clearance radius of not more than thirty-six (36) feet.

5. Braking Performance. Service and parking brake stopping and brake holding performance shall meet all Federal and State of California laws and standard. The parking brake shall be capable of holding the fully loaded Tower on a twenty-five percent (25%) grade.

6. Pump System Performance Tests. The fire pump on the completed fire Tower shall be thoroughly run-in before being delivered, and the manufacturer's pump test shall comply with the latest addition of NFPA 1901. The pumping system, including the pressure control device, priming device, and tank, shall be certified by a nationally recognized testing laboratory in accordance with the certification tests requirements of the latest addition of NFPA 1901. Certification testing shall be done by Seller.

7. Aerial Device "Platform" System Performance Tests. The Platform on the completed fire Tower shall be thoroughly run-in before being delivered, and the manufacturer's Platform test shall comply with the latest addition of NFPA 1901. The Platform system, including the pressure control device, hydraulic system and ladder, shall be certified by a nationally recognized testing laboratory in accordance with the certification tests requirements of the latest addition of NFPA 1901. Certification testing shall be done by Seller.

EXHIBIT "C"

CERTIFICATE OF OWNERSHIP AND TRANSFER OF TITLE

Seller, South Coast Fire Equipment hereby certifies, pursuant to the terms of the "**Fire Engine Purchase Agreement By and Between the Big Bear Fire Authority and South Coast Fire Equipment."** ("Purchase Agreement") that Seller possesses good and marketable title to the Tower, as defined in the Purchase Agreement, and hereby transfers free and clear title to said Tower to the Big Bear Fire Authority for valuable consideration this _____ day of _____, 2021.

Seller further certifies the truth and accuracy of all representations and warranties set forth in the Purchase Agreement.

SOUTH COAST FIRE EQUIPMENT

By: _____

Name: _____

Title: _____

Date: _____

ATTACHMENT 4D

BIG BEAR FIRE DEPARTMENT

100% Pre-Payment Option
September 9, 2021

If a 100% pre-payment were made at contract signing, the following discount would be applied to the final invoice:

	Each	Extension
One (1) Arrow XT 100' Mid Mount Tower per enclosed proposal	**$ 1,444,217.60**	**$ 1,444,217.60**
100% Prepayment Discount	$ (43,521.00)	$ (43,521.00)
APPARATUS COST	**$ 1,400,696.60**	**$ 1,400,696.60**
Sales Tax @ 7.750%	$ 108,553.99	$ 108,553.99
Performance Bond	$ 3,538.33	$ 3,538.33
Consortium Fee Not Applicable	$ -	$ -
California Tire Fee	$ 17.50	$ 17.50
TOTAL PREPAY PURCHASE PRICE	**$ 1,512,806.42**	**$ 1,512,806.42**
Less 100% pre-payment at Contract Signing	$ 1,512,806.42	$ 1,512,806.42
BALANCE DUE AT DELIVERY	**$0.00**	**$0.00**

100% PRE-PAYMENT DISCOUNT SHOWN ABOVE IS AVAILABLE IN TWO WAYS:

a) If your department makes a 100% cash pre-payment at contract signing.
b) If your department signs up for a lease-purchase with Pierce Financial Solutions. This would require no money down and no payments for one (1) year if desired.

* Discount for the 100% pre-payment option includes discounts for the chassis, interest, aerial (if applicable), and flooring charges.

* Any item added after this option is elected will come at additional cost and will be added to the final invoice.

Big Bear Fire Authority
3 Year Fleet Replacement Plan

	Approved 8/4/20	Revised Pricing
Fiscal Year 20/21		
Fire Engine	875,000	875,000
Ambulance	180,000	180,000
Staff Vehicle	80,000	80,000
Total Debt Financed		*875,000*
Total Use of Fund Balance		*260,000*
Fiscal Year 21/22		
Ladder Truck	1,500,000	1,700,000
Ambulance	185,000	203,000
BC Vehicle	130,000	130,000
Mechanic Vehicle	110,000	150,000
Total Debt Financed		*1,700,000*
Total Use of Fund Balance		*483,000*
Fiscal Year 22/23		
Fire Engine	895,000	895,000
Brush Engine	475,000	475,000
Ambulance	190,000	205,000
BC Vehicle	135,000	135,000
Staff Vehicle	85,000	85,000
Total Debt Financed		*1,370,000*
Total Use of Fund Balance		*425,000*
3 Year Total		
Total Debt Financed		*3,945,000*
Total Use of Fund Balance		*1,168,000*
Total Value of Apparatus		*5,113,000*

	Proposed
Fiscal Year 20/21	
Fire Engine (Completed)	670,000
Ambulance (Completed)	180,000
Staff Vehicle (Completed)	80,000
Ambulance	195,000
Staff Vehicle	80,000
Battalion Chief Vehicle	130,000
Mechanic Vehicle	150,000
Brush Engine	450,000
Adjusted Debt Financed	*400,000*
Adjusted Use of Fund Balance	*605,000*
Fiscal Year 21/22	
Ladder Truck	1,700,000
Outfit 20/21 Fire Engine (Carryover)	205,000
Total Debt Financed	*1,700,000*
Total Use of Fund Balance	*205,000*
Fiscal Year 22/23	
Fire Engine	895,000
Ambulance	205,000
BC Vehicle	135,000
Total Debt Financed	*895,000*
Total Use of Fund Balance	*340,000*
3 Year Total	
Total Debt Financed	*3,665,000*
Total Use of Fund Balance	*1,410,000*
Total Value of Apparatus	*5,075,000*

Estimated Apparatus Savings	38,000
Estimated Interest Savings	28,000
Total Estimated Savings	66,000