



WHITE COUNTY BOARD OF COMMISSIONERS

1235 Helen Highway

CLEVELAND, GEORGIA 30528

Phone: 706-865-2235 www.whitecountyga.gov

REQUEST FOR PROPOSAL

Project Title: Fire Apparatus – New or Demo/Stock RFP: # WCFD-2021-01

PROJECT DESCRIPTION:

White County is interested in acquiring a vehicle for the Fire Services Division that meet the specifications contained within this proposal document.

RFP SPECIFICATIONS:

Proposals must be submitted in a sealed envelope. The vendor's name, opening date, and complete project name must appear legibly on the outside of the envelope. Proposals will be accepted until the date and time of opening. Proposals that address all elements of the scope of work must be submitted on the proposal form included and in a separate envelope/package.

A transmittal letter that states the proposal is submitted in response to **Fire Apparatus RFP # WCFD-2021-01**. Letter must be signed by a person authorized to enter into a contractual agreement on behalf of the submitting firm. Name, title, email address and phone number should be included.

In considering the proposals submitted the criteria used to evaluate the proposals will include:

- ✓ Cost Proposal
- ✓ Condition of Vehicle
- ✓ Type of Vehicle

with each factor being given equal weight.

The White County Board of Commissioners reserves the right to have full inspection of any vehicles offered in proposals submitted to verify the current condition of vehicles.

Vehicles must have a clear title, able to be transferred at time of sale.

Irrevocable Bid Period: Bids are irrevocable for a period of 60 calendar days after the bid deadline unless the White County consents to a different time. White County reserves the right to accept or reject any or all bids.

A vendor information sheet must be completed and accompany bid submittal. This form is attached or may be downloaded from our web page: www.whitecountyga.gov

GENERAL SCOPE OF PROJECT:

White County solicits bids for New or Demo/Stock Fire Apparatus in accordance to the attached specifications for each type vehicle (See Specifications Document). These may be purchased individually from different vendors or as a package deal from a single vendor. The bidder may proposal all or one of the units in the bid based on detailed specifications. The following apparatus is being sought:

1. (1) TYPE 1 ENGINE/PUMPER
MINIMUM 1250GPM AND 1000 GALLON WATER SUPPLY

DUE DATE:

Sealed proposals must be submitted to the White County Board of Commissioners Office by 4:00 pm on January 4th, 2022, **WITHOUT EXCEPTION**. At that time proposals will be opened publicly in the Board of Commissioners' Office Conference Room – 1235 Helen Highway Cleveland, GA. An award will be made after complete review of the proposals. The successful bidder will be formally notified by mail.

REQUIRED DOCUMENTS:

The following affidavits must be signed and included in all proposals submitted.

- Bidders Affidavit (Appendix A)
- SAVE Affidavit (Appendix B)
- E-Verify Affidavit (Appendix C)
- Signed Contract (Appendix D)
- Vendor Information Form (Appendix E)
- W-9
- Evidence of Insurance

Questions:

All questions must be submitted in writing and directed to Director David Murphy by email at dmurphy@whitecounty.net. Deadline for questions is December 9th, 2021 12:00pm.

The Request for Proposals shall be governed by the following schedule:

DATE	ACTIVITY
December 1, 2021	Release of RFP
December 9, 2021 12:00 pm EST	Deadline for written questions to Director.
December 16, 2021, 5:00 pm EST	Answers to written questions and addenda posted to the website
January 4, 2022 2:00 pm EST	Proposals Due



WHITE COUNTY BOARD OF COMMISSIONERS REQUEST FOR PROPOSAL FORM

Bid information	
<i>Bid Number:</i>	RFP # WCFD-2021-01
<i>RFP Name:</i>	WCFD-2021-01
<i>Issue Date:</i>	12/01/2021
<i>Due date/time:</i>	01/04/2021 04:00 pm

White County Contact	
<i>Name:</i>	Mr. David Murphy
<i>Title:</i>	Public Safety Director
<i>Phone:</i>	(706) 865-9500
<i>Email:</i>	dmurphy@whitecounty.net

Description – per attached specifications	
	<u>Price</u> \$
Current Mileage	<u>Mileage</u>
Rate Condition – See attached explanation (subject to verification by White County) 1)Excellent 2)Good 3) Fair 4) Poor	<u>List Rating Here</u>
Please list any time constraints with White County taking possession of vehicle:	

The undersigned certifies that he/she offers to furnish materials/services in strict accordance with requirements of this proposal including terms and conditions attached; that the prices quoted are correct and he/she agrees that this bid may not be withdrawn for a period of 60 days from due date noted above.

Authorized Signature: _____ Title: _____ Date: _____

Company: _____ Phone#: _____

Submit Proposals to: White County Board of Commissioners
1235 Helen Highway
Cleveland, GA 30528

Specifications - RFP # WCFD-2021-01

See attached Appendices for apparatus specifications. The following shall be bid in part or whole New & Demo/Stock Options:

Engine-Pumper (One) –

Custom Built Option – Spartan 5-Man Cab 4-BA Seats; 400HP ICS Cummins; EVS Allison 3000; 1250GPM Q-Max; 1000 Gallon VPF Tank; All Piping Stainless Steel

Explanation of Vehicle Condition Rating:

- **Excellent** condition means that the vehicle looks new, is in excellent mechanical condition and needs no reconditioning. This vehicle has never had any paint or body work and is free of rust. The vehicle has a clean Title History and will pass a smog and safety inspection. The engine compartment is clean, with no fluid leaks and is free of any wear or visible defects. The vehicle also has complete and verifiable service records. Less than 5 percent of all used vehicles fall into this category.
- **Good** condition means that the vehicle is free of any major defects. This vehicle has a clean Title History, the paint, body, and interior have only minor (if any) blemishes, and there are no major mechanical problems. There should be little or no rust on this vehicle. The tires match and have substantial tread wear left. A "good" vehicle will need some reconditioning to be sold at retail. Most consumer owned vehicles fall into this category.
- **Fair** condition means that the vehicle has some mechanical or cosmetic defects and needs servicing but is still in reasonable running condition. This vehicle has a clean Title History, the paint, body and/or interior need work performed by a professional. The tires may need to be replaced. There may be some repairable rust damage.
- **Poor** condition means that the vehicle has severe mechanical and/or cosmetic defects and is in poor running condition. The vehicle may have problems that cannot be readily fixed such as a damaged frame or a rusted-through body. A vehicle with a branded title (salvage, flood, etc.) or unsubstantiated mileage is considered "poor." A vehicle in poor condition may require an independent appraisal to determine its value.



AFFIDAVIT OF SUCCESSFUL BIDDER

(In Compliance with Official Code of Georgia Annotated 36-84-1)

GEORGIA, WHITE COUNTY

Personally appeared before the undersigned officer, duly authorized by law to administer oaths, _____ and _____, (Individuals, Partners or President and Secretary respectively) of _____, who after being duly sworn depose and say on oath that _____ and its employees, agents or servants, have not prevented or attempted to prevent any person or persons, firm or corporation desiring to procure for himself or other, any person, firm or other legal entity from making a bid therefore nor has such person, firm or legal entity attempted to induce any other person, firm or legal entity to withdraw a bid for said work nor has such person, firm or other legal entity in any way violated the terms or provisions set forth in Official Code of Georgia Annotated Section 36-84-1.

Sworn to and subscribed before me, this the ____ day of _____, 2021.

Notary Public

My Commission Expires: _____

Instructions: This Affidavit should be executed by the individual, if individually bid; by all partners, if it is a bid of a partnership; by the officers or the agents or other persons who may have acted for or represent a corporation in the bidding of the contract, if the bidder is a corporation.

SAVE Affidavit

O.C.G.A. § 50-36-1(e)(2)

By executing this affidavit under oath, as an applicant for doing business with White County Government /Occupational Tax Certificate / Alcohol License [type of public benefit], as referenced in O.C.G.A. § 50-36-1, from White County Government the undersigned applicant verifies one of the following with respect to my application for a public benefit:

- 1) _____ I am a United States citizen.
- 2) _____ I am a legal permanent resident of the United States.
- 3) _____ I am a qualified alien or non-immigrant under the Federal Immigration and Nationality Act with an alien number issued by the Department of Homeland Security or other federal immigration agency.

My alien number issued by the Department of Homeland Security or other federal immigration agency is: _____

The undersigned applicant also hereby verifies that he or she is 18 years of age or older and has provided at least one secure and verifiable document, as required by O.C.G.A. §50-36-1(e)(1), with this affidavit.

The secure and verifiable document provided with this affidavit can best be classified as:

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of O.C.G.A. § 16-10-20, and face criminal penalties as allowed by such criminal statute.

Executed in _____ (city), _____ (state).

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

Notary Public

My Commission Expires:

Business Name

Signature of Applicant

Printed Name of Applicant



E-Verify Affidavit

Georgia Security & Immigration Compliance (GSIC) Act (CONTRACTOR) E-VERIFY AFFIDAVIT AND AGREEMENT

The Development Authority of White County and Contractor agree that compliance with the requirements of O.C.G.A. § 13-10-91 and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

By executing this affidavit, the undersigned Contractor verifies its compliance with O.C.G.A. § 13-10-91, *stating affirmatively that the individual, firm, or corporation which is contracting with the Development Authority of White County has registered with and is participating in the federal work authorization program known as "E-Verify", web address <https://e-verify.uscis.gov/enroll/>* operated by the United States Citizenship and Immigration Services Bureau of the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 [(IRCA), P.L. 99-603], *in accordance with the applicability provisions and deadlines established in O.C.G.A. § 13-10-91.* The undersigned Contractor also verifies that he/she/it is using and will continue to use the federal work authorization program throughout the contract period.

The undersigned Contractor agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to the contract with the Development Authority of White County, Contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees the Contractor will advise the Development Authority of White County of the hiring of a new subcontractor and will provide Development Authority of White County with a Subcontractor Affidavit attesting to the Subcontractor's name, address, user identification number, and date of authorization to use the Federal Work Authorization Program within five (5) days of the hiring before the Subcontractor begins working on the Project. Contractor also agrees to maintain all records of such compliance for inspection by Development Authority of White County at any time and to provide a copy of each such verification to the Development Authority of White County at the time the subcontractor(s) is retained to perform such services.

E-Verify Employment Eligibility Verification User identification Number

Date of Authorization to Use Federal Work Authorization Program

NAME OF CONTRACTOR

Title of Authorized Officer or Agent of Contractor

Signature and Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE _____ DAY OF _____, 20_____.

Notary Public

My Commission Expires:_____

** As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA). Authority O.C.G.A. § 13-10-91. History: Original Rule entitled "Contractor Affidavit and Agreement" adopted F. May 25, 2007; eff. June*

CONTRACT FOR _____**STATE OF GEORGIA
WHITE COUNTY**

THIS AGREEMENT, made and entered into this _____ day of _____, 2022, by and between **WHITE COUNTY, GEORGIA, a political subdivision of the State of Georgia, acting by and through its governing authority, the White County Board of Commissioners** (hereinafter referred to as the "**COUNTY**") and _____ (hereinafter referred to as the "**CONTRACTOR**").

WITNESSETH:

WHEREAS, the **CONTRACTOR** has submitted to the **COUNTY** a description of the services it is willing to undertake in the performance of certain professional services; and

WHEREAS, the proposal submitted (as attached) by the **CONTRACTOR** has been approved and accepted by the **COUNTY**; and

WHEREAS, the parties hereto desire to reduce the terms of this **AGREEMENT** to writing;

NOW THEREFORE, in consideration of the mutual promises and obligations set forth herein, the sufficiency of which is hereby acknowledged, the parties hereto mutually agree to the following:

1. Character of the Work:

The **CONTRACTOR** agrees to perform

_____, in a manner satisfactory to the **COUNTY**, set forth in Exhibit "A," which is attached hereto and incorporated herein by reference.

2. Compensation:

The **COUNTY** agrees to pay the **CONTRACTOR** for services rendered under this agreement in accordance with the bid price set forth in Exhibit "A". **CONTRACTOR** shall submit invoices at the completion of the project, and payment shall be due within ten (10) days of receipt of the invoice by the **COUNTY**. All payments shall be mailed to the **CONTRACTOR**, unless prior arrangements to pick up the payment have been made.

3. Term of Agreement:

The term of this Agreement shall be for a period commencing on _____ and ending on _____.

4. Termination:

If, through any cause, the **CONTRACTOR** shall fail to fulfill in a timely and proper manner its obligations under this Agreement, the **COUNTY** shall thereupon have the right to terminate this Agreement by giving written notice to the **CONTRACTOR** of such termination and specifying the effective date thereof, which effective date shall be no earlier than fourteen (14) calendar days after receipt of the written notice by the **CONTRACTOR**. Notwithstanding, the **CONTRACTOR** shall not be relieved of liability to the **COUNTY** for damages sustained by the **COUNTY** by the virtue of any breach of this Agreement, and the **COUNTY** may withhold payment to the **CONTRACTOR** for the purpose of setoff until such time as the exact amount of damages sustained by the **COUNTY** from such breach can be determined.

5. Indemnification:

The **CONTRACTOR** shall hold harmless and indemnify the **COUNTY** and its officials, employees, and agents from and against any and all claims, damages, liabilities, suits, actions, judgments, and expenses of litigation (including, without limitation, reasonable attorney’s fees) arising from or in any way related to the **CONTRACTOR’S** performance of this Agreement.

6. Proof of Insurance:

The **CONTRACTOR** shall maintain insurance in the types and amounts stated below during the term of this Agreement and any renewals or extensions thereof, and shall provide adequate proof of same to the **COUNTY** prior to commencing performance under this Agreement.

Insurance- Contractor shall maintain at a minimum the following types and amounts of insurance: (i) statutorily required workmen’s compensation insurance; (ii) comprehensive general liability insurance with limits of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate, and with an endorsement naming White County as an additional insured; and (iii) automobile liability insurance with limits of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate. Workman’s Compensation and Employer’s Liability in limits of liability as provided by statutes of the State of Georgia.

7. Assignability/Transferability:

The **CONTRACTOR** shall not assign or transfer any interest in this **AGREEMENT** without the written consent of the **COUNTY**.

8. Entire Agreement; Amendments:

This Agreement represents the entire agreement between the parties with respect to the subject matter hereof, and all prior agreements relating to the subject matter hereof, whether written or oral, are nullified and superseded hereby, and neither party shall have any further rights or obligations under such superseded agreements. This Agreement may be amended or supplemented only by a written amendment duly executed and signed by all parties to this Agreement.

9. Notices

Any notices permitted or required to be given pursuant to this Agreement shall be in writing and shall be deemed sufficient if sent via U.S. mail to the respective parties at the following addresses:

If to the **COUNTY**:

White County Board of Commissioners
Attn: Joey Cason, County Manager
1235 Helen Hwy
Cleveland, GA 30528

If to the **CONTRACTOR**:

Attn: _____

If sent via regular U.S. mail, such written notice shall be deemed to have been “received” three business days after it is deposited in the mail with a proper address and with adequate postage affixed.

10. No Waiver:

No failure on the part of either party to this Agreement at any time to require performance by the other party of any term or condition of this Agreement shall be taken or held to be a waiver of such term or condition or in any way affect such party’s right to enforce such term or condition, and no waiver on the part of either party of any term or condition of this Agreement shall be taken or held to be a waiver of any other term or condition hereof.

11. Immunity:

Nothing contained in this Agreement shall be construed or deemed to be a waiver of any immunity to which the parties or their officials, employees, or agents are legally entitled.

12. Legal Construction; Severability:

This Agreement shall be governed by and construed in accordance with the laws of the State of Georgia. In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision of this Agreement and this Agreement shall be construed as if the invalid, illegal, or unenforceable provision had never been contained in it.

IN WITNESS WHEREOF, the **COUNTY** and the **CONTRACTOR** have executed this agreement as of the first date above written.

COUNTY:

CONTRACTOR:

BY: _____

BY: _____

TITLE: _____

TITLE: _____

ATTEST: _____

ATTEST: _____

DATE: _____

DATE: _____

White County Vendor Information Form

(Please print or type)

DATE: _____ BUSINESS LICENSE NO: _____

COMPANY NAME: _____

ADDRESS: _____

CITY/STATE: _____ ZIP: _____

BILLING ADDRESS: _____

CONTACT NAME/TITLE: _____

EMAIL ADDRESS: _____

PHONE NO: _____ FAX NO: _____

TAXPAYER I.D. NUMBER OR S.S. NUMBER: _____

LIST THE APPROPRIATE COMMODITY CODE(S) THAT YOUR COMPANY IS CAPABLE OF SUPPLYING
(please list in numeric order): _____

Place an "x" beside the description(s) that best describe your organization:

Authorized Distributor _____ Professional Services _____

Construction _____ Service Provider _____

Retail _____ Wholesaler _____ Manufacturer _____ Factory Representative _____

Minority Owned _____ Women Owned _____

Large Business _____ Small Business _____

Date Opened: _____

Partnership _____ Incorporated _____ LLC _____ DBA _____ State: _____

Terms: _____ Liability Insurance: _____ Workers Comp Insurance: _____ Years in Business: _____

NAME, TITLE, AND SIGNATURES OF PERSONS AUTHORIZED TO SIGN BIDS AND CONTRACTS (if you need additional space, attach names on your letterhead):

NAME	TITLE	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____

LIST THREE REFERENCES WHOM YOU HAVE COMPLETED SIMILAR BUSINESS WITH:

COMPANY NAME	CONTACT PERSON	E-MAIL	PHONE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

I certify that the information that is stated above is factual and true and the taxpayer identification or social security number is correct:

SIGNATURE: _____ TITLE: _____ DATE: _____

RETURN THIS FORM WITH YOUR BID PACKAGE:

[Along with your W9 Form](#)

White County Board of Commissioners

1235 Helen Highway

Cleveland, GA 30528

Request for Taxpayer Identification Number and Certification

Give Form to the
 requester. Do not
 send to the IRS.

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name/disregarded entity name, if different from above	
	Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Exempt payee <input type="checkbox"/> Other (see instructions) ▶ _____	
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	City, state, and ZIP code	
List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number									
				-					

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Employer identification number									
					-				

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶ _____	Date ▶ _____
------------------	----------------------------------	--------------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,
- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name/disregarded entity name" line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the "Name" line and any business, trade, or "doing business as (DBA) name" on the "Business name/disregarded entity name" line.

Disregarded entity. Enter the owner's name on the "Name" line. The name of the entity entered on the "Name" line should never be a disregarded entity. The name on the "Name" line must be the name shown on the income tax return on which the income will be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a domestic owner, the domestic owner's name is required to be provided on the "Name" line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the "Business name/disregarded entity name" line. If the owner of the disregarded entity is a foreign person, you must complete an appropriate Form W-8.

Note. Check the appropriate box for the federal tax classification of the person whose name is entered on the "Name" line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the "Name" line is an LLC, check the "Limited liability company" box only and enter the appropriate code for the tax classification in the space provided. If you are an LLC that is treated as a partnership for federal tax purposes, enter "P" for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter "C" for C corporation or "S" for S corporation. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the "Name" line) is another LLC that is not disregarded for federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the "Name" line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/disregarded entity name" line.

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the "Business name/disregarded entity name," sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),
2. The United States or any of its agencies or instrumentalities,
3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,
4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or
5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,
7. A foreign central bank of issue,
8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,
9. A futures commission merchant registered with the Commodity Futures Trading Commission,
10. A real estate investment trust,
11. An entity registered at all times during the tax year under the Investment Company Act of 1940,
12. A common trust fund operated by a bank under section 584(a),
13. A financial institution,
14. A middleman known in the investment community as a nominee or custodian, or
15. A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 5 and 7 through 13. Also, C corporations.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7 ²

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, below, and items 4 and 5 on page 4 indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see *Exempt Payee* on page 3.

Signature requirements. Complete the certification as indicated in items 1 through 3, below, and items 4 and 5 on page 4.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity ⁴
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.ftc.gov/idtheft or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

WCFD-2021-01
MINIMUM 1250GPM SIDE
MOUNT PUMPER

David Murphy

WHITE COUNTY PUBLIC SAFETY CLEVELAND, GA

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser of a complete *NFPA 1901 2016 or later edition complaint* apparatus equipped as hereinafter specified. The engine must With a view to obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover the general requirements as to the type of construction, together with certain details as to finish, equipment, and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. A mobile service crew shall be available to handle all service-related issues on a twenty-four-hour basis. *Dealer may bid demo/stock units already built, that meets the minimum specifications here-in. If dealer bids demo/stock conventional chassis it must meet engine and transmission specifications.*

DELIVERY & TERMS

The successful bidder shall agree to furnish the apparatus within **180 to 210** calendar days after the receipt of order. The apparatus shall be paid in full upon acceptance by the Fire Department at the manufacturer's facility or by negotiated delivery.

SAFETY REQUIREMENTS

It is expected that the Bidder shall meet all State and Federal safety standards and laws that are in effect on the date of the bid for the item(s) that are being specified and the particular use for which they are meant.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices, experimental designs and methods shall not be acceptable.

The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: accessibility of the various units that require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry loads as specified.

GENERAL CONSTRUCTION

The complete apparatus, assemblies, subassemblies, component parts and so on, shall be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service

All parts of the apparatus shall be strong enough to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and repair.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters; shall be carried without overloading or injuring the apparatus as per requirements defined in NFPA 1901.

OPERATION AND SERVICE DOCUMENTATION

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

The contractor shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

- Manufacturer's name and address
- Country of manufacture
- Source of service and technical information
- Parts and replacement information
- Descriptions, specifications, and ratings of the chassis, pump, and aerial device
Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator-battery power distribution circuits, and input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- Lubrication charts
- Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- Precautions related to multiple configurations of aerial devices, if applicable
- Instructions regarding the frequency and procedure for recommended maintenance
- Overall apparatus operating instructions
- Safety considerations
- Limitations of use
- Inspection procedures
- Recommended service procedures
- Troubleshooting guide
- Apparatus body, chassis, and other component manufacturers warranties
- Special data required by this standard
- Copies of required manufacturer test data or reports, manufacturer certifications, and

- independent third-party certifications of test results
- A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The contractor shall deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

BASIC LIMITED WARRANTY

The apparatus shall be free of defects in material and workmanship for a period of one (1) year starting at the time of delivery to the department.

BODY STRUCTURAL INTEGRITY WARRANTY

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles, starting thirty (30) days after the original invoice date.

PAINT LIMITED WARRANTY

The body shall be free of bubbling or peeling because of a defect in the method of manufacture for a period of seven (7) years starting thirty (30) days after the original invoice date.

CORROSION LIMITED WARRANTY

The body shall be free of rust, and corrosion because of a defect in the method of manufacture for a period often (10) years starting thirty (30) days after the original invoice date.

OVERALL HEIGHT

The overall height of the vehicle shall not exceed 9.9" from the ground.

OVERALL LENGTH

The overall length of the vehicle shall be approximately *TBD*.

APPARATUS CHASSIS

MODEL

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

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2020 or later model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA). The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis, or their OEM needed to follow those regulations.

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 1250 gallons per minute (3000 L/min). The apparatus shall include a water tank (1000 gal) and hose body whose primary purpose is to combat structural and associated fires.

VEHICLE TYPE

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

AXLE CONFIGURATION

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

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be minimum 18,000 pounds. This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be minimum 27,000 pounds. This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

CAB STYLE

The cab shall be a custom, fully enclosed, model with either a flat or 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to six (6) seating positions.

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

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

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

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13- & 0.19-inch-thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the “A” pillar, adding strength and rigidity to the cab as well as additional roll-over protection.

The cab side walls, and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

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

All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of width and height, from the cab floor to the top of the door opening. The cab shall also include a crew

area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of width and height, from the cab floor to the top of the door opening.

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

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

OCCUPANT PROTECTION

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

The system components shall include:

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

- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

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

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

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

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

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

CAB FRONT FASCIA

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

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

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

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

CAB UNDERCOAT

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

CAB SIDE DRIP RAIL

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

CAB PAINT EXTERIOR

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

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

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint, and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the specific color designated by the customer with a minimum thickness of 2.00 mils of paint, followed by a clear topcoat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT WARRANTY

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

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

CAB ENTRY DOORS

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

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

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

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period often (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

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

ELECTRICAL SYSTEM

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

APPARATUS WIRING PROVISION

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

LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through twelve (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output thirteen (13) shall be designated to activate a fast idle system. Output fourteen (14) shall provide a low voltage warning for an isolated battery. Output fifteen (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output sixteen (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

DATA RECORDING SYSTEM

The chassis shall have a Class One Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status

- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

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

ACCESSORY POWER

A 40-amp battery direct power and ground stud shall be provided and installed in the electrical distribution panel. The stud shall be size #10 and protected with a 40-amp circuit breaker.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

The chassis shall be powered by a Cummins diesel engine as described below:

MODEL:	L9-450
NUMBER OF CYLINDERS:	Six
BORE AND STROKE:	4.49 in (114 mm) x 5.69 in (145 mm)
DISPLACEMENT:	543 cu. in. (8.9L)
RATED BHP:	450 hp (336 kW) @ 2100 RPM
TORQUE:	1250 lb.-ft (1696 N-m) @ 1400 RPM
COMPRESSION RATIO:	16.6:1
GOVERNED RPM:	2200

Standard Equipment on the engine to include the following:

OIL FILTER:	A full flow / by-pass combination
LUBE OIL COOLER:	High efficiency non-drain back full flow cooling
FUEL FILTERS:	Two fuel filters providing 3 / 10-micron absolute filtration
STARTER:	12 volts
AIR COMPRESSOR:	A Wabco 18.7 cfm compressor shall be provided

Engine Cooling System Radiator - 1400 Sq. In.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high and shall be insulated in a manner to reduce radiant heat to the cab compartment.

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

The engine shall utilize a variable geometry turbo (VGT) or equivalent. The VGT auxiliary engine brake shall be an integral part of the turbo and shall offer a variable rate of exhaust flow, which when activated shall slow the engine and in turn slow the vehicle.

The VGT shall actuate the vehicle's brake lights when engaged as an auxiliary brake. A cutout relay shall be installed to disable the VGT when in pump mode or when an ABS event occurs. The VGT engine brake shall activate at a 0% accelerator throttle position when in operation mode.

AUXILIARY ENGINE BRAKE CONTROL

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

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

The variable geometry turbo brake control shall be controlled through an on/off rocker switch.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

FLUID FILLS

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE WARRANTY

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

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

The engine cooling system fan shall be direct drive belt driven on the engine.

ENGINE COOLING SYSTEM

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

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

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

The cooling system shall include a one-piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.

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

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

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

ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC), or equivalent. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from

encountering the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

COOLANT HOSES

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

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be in the front of the cab behind the right-hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

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

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right-hand side headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE EXHAUST SYSTEM

The exhaust system shall be mounted below the frame in the outboard position with the SCR canister in line rearward of the DPF. The exhaust system shall utilize a 90-degree bend in the exhaust tubing from the turbo into a side inlet DPF canister that allows the entire system to be pulled forward. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NO_x into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system through the decomposition tube between the DPF and SCR.

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

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall relate to zero leak clamps.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons.

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

The tank fill tube shall be routed under the rear of the body with the fill neck and splash guard accessible drivers' side in front of rear wheel.

ENGINE EXHAUST ACCESSORIES

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

ENGINE EXHAUST WRAP

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

TRANSMISSION

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

The transmission shall include two (2) internal oil filters which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

- 1st 3.49:1
- 2nd 1.86:1
- 3rd 1.41:1
- 4th 1.00:1

5th 0.75:1
 6th 0.65:1 (if applicable)
 Rev 5.03:1

TRANSMISSION MODE PROGRAMMING

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

TRANSMISSION FEATURE PROGRAMMING

This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

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

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module. The transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

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

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION WARRANTY

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

DRIVELINE

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

MIDSHIP PUMP / GEARBOX

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

MIDSHIP PUMP / GEARBOX MODEL

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

MIDSHIP PUMP GEARBOX DROP

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

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.28:1 (23).

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

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 80.00 inches.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

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

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

ELECTRIC FUEL PRIMER

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

FUEL COOLER

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the rear axle.

FUEL TANK

The fuel tank shall have a capacity of at least fifty (50) gallons. The baffled tank shall be made of 14-gauge aluminized steel. The exterior of the tank shall be painted with a black anticorrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

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

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

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

FUEL TANK FILL PORT

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-18 or equivalent. The axle shall include a 3.74 inch drop and a 71.00-inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 18,000 pounds.

FRONT AXLE WARRANTY

The front axle shall be warranted by the manufacturer for two (2) years with unlimited miles under the general service application. Details of the warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

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

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

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

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

FRONT SUSPENSION

The front suspension shall include a four (4) leaf spring pack consisting of 54.00 inch long and 4.00-inch-wide taper leaf springs and shall feature a military double wrapped front eye. Both spring eyes shall have a case-hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at minimum 18,000 pounds.

STEERING COLUMN/ WHEEL

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

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

POWER STEERING PUMP

The hydraulic power steering pump shall be a TRW PS, or equivalent, and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 50-degrees to the left and right.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 85 or equivalent.

CHASSIS ALIGNMENT

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

REAR AXLE

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

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

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by the manufacturer for two (2) years with unlimited miles under the general service application. Details of the warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50-inch X 3.00-inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided, or equivalent.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

FRONT TIRE

The front tires shall be Goodyear or Michelin 365/80R-22.5 20PR "L" tubeless radial G287 MSA regional tread.

REAR TIRE

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

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

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

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

REAR AXLE RATIO

The rear axle ratio shall be 5.38:1.

TIRE PRESSURE INDICATOR

There shall be a voucher provided with the chassis for a dial style tire pressure indicator at the front tire valve stem and a pop-up style tire pressure indicator at the rear tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.

REAR WHEEL

The outer rear wheels shall be Alcoa hub piloted, 22.50-inch X 8.25-inch LvL One™ aluminum wheels with a polished outer surface. The inner rear wheels shall be Alcoa hub piloted, 22.50-inch X 8.25-inch aluminum wheels with LvL One™ bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

BRAKE SYSTEM

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

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

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

braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

FRONT BRAKES

The front brakes shall be Meritor, or equivalent, 16.50-inch x 6.00-inch S-cam drum type. Disc brakes would be considered.

REAR BRAKES

The rear brakes shall be Meritor, or equivalent, 16.50-inch X 7.00-inch S-cam drum type. The brakes shall feature a cast iron shoe. Disc brakes would be considered.

PARK BRAKE

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

PARK BRAKE CONTROL

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

The parking brake actuation valve shall be mounted on the center of the tunnel within easy access of both the driver and officer positions.

FRONT BRAKE SLACK ADJUSTERS

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

REAR BRAKE SLACK ADJUSTERS

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

AIR DRYER

The brake system shall include a Wabco System Saver, or equivalent, 1200 air dryer with an integral 100-watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right-hand frame rail forward of the front wheel behind the right-hand cab step.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with type 30 brake chambers.

REAR BRAKE CHAMBERS

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

AIR COMPRESSOR

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

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be mounted to the right frame rail.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system. A cable system routed to the exterior of the cab shall be provided in a protected area to allow system to be bled.

AIR SUPPLY LINES

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

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

WHEELBASE

The chassis wheelbase shall be approximately 190.00 inches.

REAR OVERHANG

The chassis rear overhang shall be approximately 43.00 inches.

FRAME

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

with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100-inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

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

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

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

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

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

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME WARRANTY

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

FRAME PAINT

The frame shall be powder coated black prior to any attachment of components.

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

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

FRONT BUMPER

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

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 24.00 inches ahead of the cab.

FRONT BUMPER EXTENSION FRAME WIDTH

The front bumper extension frame shall feature an overall width of 48.25 inches.

AIR HORN

The chassis shall at a minimum shall include one (1) air horn. The air horn shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horn shall be recess mounted in the front bumper face in the furthest inboard position, relative to the outside of the frame rail, on the left side of the bumper.

AIR HORN RESERVOIR

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

FRONT BUMPER TOW HOOKS

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

FASTNERS

All cab exterior fasteners shall be stainless steel type fastened to the cab with nutserts.

CAB TILT SYSTEM

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

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

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

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

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

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

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right-hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

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

CAB WINDSHIELD

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

The glass utilized for the windshield shall include standard automotive tint.

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

GLASS FRONT DOOR

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

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

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

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

GLASS TINT REAR DOOR RIGHT HAND

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

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

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

GLASS SIDE MID RH

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure approximately 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self-locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID RIGHT HAND

The window located on the right-hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS SIDE MID LH

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure approximately 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be

mounted using self-locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID LEFT HAND

The window located on the left-hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

CLIMATE CONTROL

The cab shall include a 57,500 BTU @ 425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.

The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, four (4) forward facing and four (4) rearward facing, a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 42,500 BTU/Hr. of cooling and 36,000 BTU/Hr. of heating. The temperature and blower controls shall be located on the heater/air conditioning unit.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bend zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aeroquip EZ clip fittings.

CLIMATE CONTROL DRAIN

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

CLIMATE CONTROL ACTIVATION

The heating and defrosting controls shall be located on the front overhead climate control unit. There shall be additional heating and air conditioning controls located on the engine tunnel mounted climate control unit.

A/C CONDENSER LOCATION

The A/C condenser shall be integrated into the cooling system mounted forward of the radiator on the front of the charge air cooler.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

CAB INSULATION

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

UNDER CAB INSULATION

To reduce the noise in the cab the doghouse metal on the inside of the cab shall be completely covered with Acoustiblok sound isolation material. The material shall be sealed at all seams with acoustical sealant.

The engine doghouse inside the cab will be padded with an additional layer of sound and heat absorbing foam and covered with heavy duty vinyl trim upholstery to match or accent the interior of the cab.

The underside of the engine enclosure shall be covered with a sandwiched material for interior cab noise and heat rejection. This sandwiched acoustical material shall have one layer of 1/8" foam, a 3/16" single barrier septum and a 7/8" layer of foam to provide an overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

The insulation for protection from heat and sound shall keep the dB level within the limits stated in the current edition of NFPA 1901.

INTERIOR TRIM FLOOR

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

INTERIOR TRIM VINYL

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

REAR WALL INTERIOR TRIM

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

HEADER TRIM

The cab interior shall feature header trim above the driver and officer positions constructed of vacuum formed ABS material.

TRIM CENTER DASH

The main center dash area shall be constructed of durable vacuum formed ABS composite.

TRIM LH DASH

The left-hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel. The left-hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right-hand dash trim shall consist of a vacuum formed ABS composite module, which contains a glove compartment with a hinged locking door and a Mobile Data Terminal (MDT) provision. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

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

STEP TRIM

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

UNDER CAB ACCESS DOOR

The cab shall include an access door in the left crew step riser constructed of DA finish aluminum with a push and turn latch.

INTERIOR DOOR TRIM

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

DOOR TRIM CUSTOMER NAMEPLATE

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

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

A rubber covered 11.00-inch grab handle shall be provided on the inside of the cab on the hinge post at the driver and officer doors. The handle shall assist personnel in exiting and entering the cab.

INTERIOR GRAB HANDLE FRONT DOOR

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

INTERIOR GRAB HANDLE REAR DOOR

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

INTERIOR TRIM VINYL COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR ABS TRIM COLOR

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with Zolatone #20-72 silver gray texture finish.

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include eight (8) switches in a single row configuration. Five (5) of the switches shall be rocker type and the left three (3) shall be the headlight switch, the instrument lamp dimmer switch, and the windshield wiper/washer control switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be

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

SWITCHES RIGHT PANEL

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

SEAT BELT WARNING

A Class One seat belt warning system, or equivalent, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

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

SEAT MATERIAL

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

SEAT COLOR

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

SEAT DRIVER

The driver's seat shall be a seat with air suspension. The four-way seat shall feature 3.00-inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

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

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

SEAT BACK DRIVER

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

SEAT MOUNTING DRIVER

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

OCCUPANT PROTECTION DRIVER

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

The driver's seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt □□ around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom Firefighter model seat or equivalent. The seat shall feature two-way manual adjustment and shall include a tapered and padded seat cushion. The seat shall also feature integral springs to isolate shock.

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

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

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK OFFICER

The officer's seat shall feature a SecureAll, or equivalent locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll, or equivalent, shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

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

SEAT MOUNTING OFFICER

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

OCCUPANT PROTECTION OFFICER

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

The officer's seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the officer, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

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

OCCUPANT PROTECTION RFO

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

Each rear facing outer seating position APS shall include:

- APS advanced seat belt system - retractor pre-tensioners tighten the seatbelts around each occupant, securing the occupants in seats and load limiters play out

some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

SEAT BELT ORIENTATION CREW

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

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

SEAT CREW FORWARD FACING CENTER

The crew area shall include a seat in the forward-facing center position which shall be a H.O. Bostrom Firefighter series, or equivalent. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

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

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

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

SEAT BACK FORWARD-FACING CENTER

The forward-facing center seat shall feature a SecureAll or equivalent self-contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed

against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll or equivalent shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

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

SEAT MOUNTING FORWARD FACING CENTER

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

OCCUPANT PROTECTION FFC

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

Each forward facing center seating position APS shall include:

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

SEAT FRAME FORWARD FACING

The forward-facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19-inch-thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height.

CAB FRONT UNDERSEAT STORAGE ACCESS

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

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

WINDSHIELD WIPER SYSTEM

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice, and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right-hand windshield wipers are attached, initiating a back-and-forth

motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

CAB DOOR HARDWARE

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

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

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

DOOR LOCKS

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

GRAB HANDLES

The cab shall include one (1) 18.00-inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25-inch diameter to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Stainless Steel Aerodynamic style single vision mirror heads shall be provided and installed on the front cab doors.

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

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

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fender 3.50 inches wide made of 12-gauge polished aluminum.

IGNITION

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

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

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

BATTERY

A single battery system shall be provided, utilizing four (4) high cycle type Group 31 batteries.

This system shall be capable of engine start after sustaining a continuous 150-amp load for 10 minutes with the engine off (NFPA-1901).

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the battery bank is activated.

BATTERY TRAY

The batteries shall be installed on a steel battery tray located on the left and right side of the chassis, securely bolted to the frame rails. The battery tray shall be coated with the same material as the frame.

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

BATTERY BOX COVER

The battery box shall include a steel cover which protects the top of the batteries on the left & right hand side of the vehicle. The cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

BATTERY CABLE

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

BATTERY JUMPER STUD

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

ALTERNATOR

The charging system shall include a 270-amp Leece Neville 12-volt alternator. The alternator shall include a self-excited integral regulator.

BATTERY CONDITIONER

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

AUXILIARY AIR COMPRESSOR

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the driver's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET

A Kussmaul 20-amp electrical receptacle shall be supplied.

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

Amp Draw Reference List:

Kussmaul 1000 Charger - 3.5 Amps

Kussmaul 1200 Charger - 10 Amps

Kussmaul 35/10 Charger - 10 Amps

Kussmaul 3000W Invertor – for future battery charging for portable equipment

1000W Engine Heater - 8.33 Amps

1500W Engine Heater - 12.5 Amps

120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left-hand side of cab over the wheel well.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

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

HEADLIGHT LOCATION

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

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00-inch X 6.00-inch LED amber arrow shaped turn signals which shall be installed outboard of the warning lights. The turn signal light heads shall be mounted in chrome plastic bezels and shall be located above the headlamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) incandescent round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

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

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

GROUND LIGHTS

Each door shall include an LED NFPA compliant ground light mounted to the underside of the cab step below each door. Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shocked mounted for extended life. The ground lighting shall be activated by the opening of the respective door as well as rocker switched. Additional ground lighting may be included such to light underside of the apparatus and be manually operated.

STEP LIGHTS

The middle step located at each door shall include a LED light which shall activate with the opening of the respective door.

ENGINE COMPARTMENT LIGHT

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

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portions can be activated by individual switches on each lamp.

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

DO NOT MOVE APPARATUS LIGHT

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

The flashing red light shall be 6.00 inches long X 2.50 inches wide X 1.75 inches high and shall be located centered left to right for greatest visibility.

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

MASTER WARNING SWITCH

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include dual modules containing headlight bulbs in the left and right inboard positions. These lights shall not be wired.

LIGHTBAR PROVISION

There shall be a junction box located on the right-hand side of the roof with electrical connections for a light bar. The light bar shall be provided and installed by the body manufacturer.

LIGHTBAR SWITCH

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right-hand side foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector with activation button present on pump panel.

BACK-UP ALARM

One (1) Back up Alarm 107 DB shall be provided and installed at the rear of the unit. It shall be wired to activate when the transmission is placed in reverse.

BACK-UP CAMERA

There shall be a backup camera system provided on the apparatus.

Observation Monitor - Driver's Instrument Panel

The driver's instrument panel shall change from instrumentation to back up camera screen when the backup system is operating. When the back up operations are complete the screen will change back to instrumentation.

REAR CAMERA - COLOR - HIGH PERFORMANCE

There shall be supplied a color, heavy-duty high-resolution observation camera.

Operation - Transmission Reverse Powered

The backup camera system shall be powered when the vehicle's transmission is placed into reverse.

Camera Mounting - Body Rear - Below Hose bed

The backup camera shall be mounted at the rear of the apparatus beneath the hose bed.

INSTRUMENTATION

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

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H.

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

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included.

The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

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

RED LAMPS

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

AMBER LAMPS

- MIL-indicates an engine emission control system fault
- Check Engine-indicates engine fault
- Check Trans-indicates transmission fault

- High Transmission Temperature-indicates excessive transmission oil temperature
- ABS-indicates anti-lock brake system fault
- Wait to Start-indicate active engine air preheat cycle
- HEST-indicates a high exhaust system temperature
- Water in Fuel-indicates presence of water in fuel filter
- DPF-indicates a restriction of the diesel particulate filter
- Regen Inhibit-indicates regeneration has been postponed due to user interaction
- Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.
- SRS-indicates a problem in the Roll Tek supplemental restraint system
- Check Message-Turn Signal On

- Check Message-Door Ajar
- Check Message-Cab Ajar
- Check Message-ESC Active
- Check Message-DPF Regen Active
- Check Message-No Engine Data
- Check Message-No Transmission Data
- Check Message-No ABS Data
- Check Message-No Data All Communication With Vehicle Systems Has Been Lost
- Check Message-Check Engine Oil Level
- Check Message-Check Washer Fluid Level
- Check Message-Check Power Steering Fluid Level
- Check Message-Low Transmission Fluid Level
- Check Message-Check Coolant Level

GREEN LAMPS

- Left and Right turn signal indicators
- ATC-indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system
- High Idle-indicates engine high idle is active.
- Cruise Control-indicates cruise control is active
- OK to Pump-indicates the pump engage conditions have been met
- Pump Engaged-indicates the pump is currently in use
- Auxiliary Brake-indicates secondary braking device is active

BLUE LAMPS

- High Beam Indicator

CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE

- High Trans Temp
- High or Low Voltage
- Seatbelt
- Check Engine
- Check Transmission
- Stop Engine
- Low Air Pressure
- Fuel Low

- Water in Fuel
- ESC
- High Coolant Temperature
- Low Engine Oil Pressure
- Low Coolant Level
- Low-DEF Level
- Air Filter Restricted
- Extended Left and Right Turn Remaining On
- Cab Ajar
- Door Ajar
- ABS System Fault
- SRS (Supplemental Restraint System) Fault

EXTERNAL AUDIBLE ALARMS

- Air Filter
- Cab Ajar
- Door Ajar
- Seatbelt
- Check Engine
- Stop Engine
- Low Air Pressure
- Water in Fuel
- Low DEF
- ABS System Fault
- SRS (Supplemental Restraint System) Fault
- High or Low Voltage

BACKLIGHTING COLOR

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

CAB EXTERIOR PROTECTION

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

FIRE EXTINGUISHER

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

DOOR KEYS

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

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

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

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

- Dearborn Group DPA4 Plus

- Noregon Systems JPRO® DLA+
- Cummins INLINE5
- Cummins INLINE6
- NexIQ™ USB-Link™

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

WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom-built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

- (1) Digital copy of the Engine Owner's manual
- (1) Digital copy of the Transmission Operator's manual
- (1) Hard copy of the Engine Operation and Maintenance manual with CD

OEM CHASSIS MODIFICATIONS

TRANSMISSION LOCK-UP EVS-3000

An electronic lock-up relay system shall be installed between the engine and transmission and the fire pump. The lock-up shall place the transmission into the 1:1 gear automatically for pump operations.

FRONT & REAR MUD FLAPS

There shall be a pair of front and rear mud flaps installed at the rear of the fenders.

REAR TOW EYES

There shall be two (2) tow eyes, one (1) on each side. They shall be attached to the frame rails, located in the rear center, under the tailboard.

EXHAUST SYSTEM

The exhaust system supplied shall follow the latest EPA Emission standard.

MASTER BATTERY SWITCH

A master battery on/off switch with shall be provided in the cab, near the driver's door.

INDEPENDENT FIRE PUMP MOUNTING

NFPA 1901 COMPLIANT PUMP

The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

SIDE PANEL MODULE

A pump operator's side panel pump module shall be provided. It shall be assembled and mounted independently from both the chassis and the body to properly allow sufficient flexing and prevent component fatigue.

The module shall be constructed using 3" square aluminum tubing with a 3/16th inch wall thickness. The welded ends of the tubing shall be chamfered prior to welding and shall be ground smooth prior to finishing. **(NO EXCEPTIONS)**

SIDE PANELS

The pump compartment module shall have left, and right-side pump panels constructed of vinyl coated aluminum or stainless-steel sheets. The side pump panels shall be removable. **(NO EXCEPTIONS)**

GAUGE PANEL

The pump operator's upper gauge panel shall be located on the left side of the pump module above the main control panel. It shall be constructed from vinyl coated aluminum or stainless steel. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

ACCESS PANEL

There shall be a hinged upper access panel located above the main pump panel on the right side of the pump module. It shall be constructed from vinyl coated aluminum or stainless steel. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

COLOR CODED LABELS

A set of color-coded and function described labels shall be provided on the apparatus for the pump operator's controls, gated inlets, discharge outlets, drains, intake gauge, and pressure gauges (as applicable). The labels shall be a high-quality plastic material with a durable adhesive on the back.

HIGH VISIBILITY WATER TANK LEVEL INDICATOR ADDITIONAL

There shall be a Whelen PSTANK2 LED high visibility water level indicator supplied one (1) on each side of the cab located beneath the cab side rain gutter behind the rear cab door.

The lights indicate the tank level as follows:

Full	Green
3/4 Full	Blue
1/2 Full	Amber
1/4 Full	Red

PUMP PANEL LIGHT SHIELD – LEFT

The light shield shall be incorporated into the stainless-steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

PUMP PANEL LIGHT SHIELD – RIGHT

The light shield shall be incorporated into the stainless-steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

PUMP COMPARTMENT LIGHTS

Two (2) LED lights shall be provided inside the pump compartment area.

RUNNING BOARDS

Diamond plate running boards shall be installed on each side of the pump compartment module. The running boards shall be constructed of 1/8" fire apparatus bright aluminum or stainless steel treadplate with grip strut. Each shall be a minimum of approximately 11" deep x the width of the side panel module.

The grip strut shall meet recommendations for slip resistant surfaces at the time of proposal. **(NO EXCEPTIONS)**

The running boards shall be attached to a frame mounted outrigger support structure. Each running board to have a 3" downward bend on the front and side faces with a 1" underside return for superior strength.

1500 GPM PUMP ASSEMBLY 1250 GPM PUMP MINIMUM ON DEMO/STOCK

HALE QMAX OR WATEROUS BRAND EQUIVILENT

1. The pump shall be of size and design to mount on the chassis rails of a commercial and/ or custom truck chassis and have the capacity of 1500 gallons/ liters per minute as NFPA-1901 rated performance requirements.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall function by the utilization of a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be tested at the pump manufacturer's facility to performance specifications as outlined by NFPA-1901 rated performance requirements. The pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be constructed of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2,069 bar). All metal moving parts in contact with water shall be manufactured of high-quality bronze or stainless steel. Any pump utilizing castings made of lower tensile strength cast iron not acceptable.
6. The pump body shall be horizontally split on a single plane in two sections, for ease of removal of the impeller assembly. Wear rings and bearings associated with the pump body shall remove easily without disturbing the piping or mounting of the pump in chassis.
7. The pump body shall incorporate the discharge manifold system with a minimum of two (2) 4" (10.16 cm) port and seven (7) 3" (7.62 cm) ports.
8. The pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.
9. The pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. There shall be one (1) high lead bronze sleeve bearing to be located immediately adjacent to the impeller found on the side opposite of the gearbox. The sleeve bearing shall be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox, and they shall be splash lubricated.
10. The pump shaft shall have only one (1) packing gland located on the inlet side of the pump. The pump shaft shall be of split design for ease of repacking. The packing gland shall be manufactured of a full-circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. (No exceptions.) The pump shaft shall be adjusted easily by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion. (No exceptions.) There is an optional mechanical seal in place of pump packing. There shall be only one (1) required on the suction (inboard) side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting.
11. The pump impeller shall have clearance rings manufactured of bronze, easy to remove, without replacing impeller or pump volute body. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
12. The pump shaft shall be manufactured of heat-treated, electric furnace, corrosion resistant stainless steel for longer shaft life. The pump shaft shall be sealed with a double-lip oil seal to keep road dirt and water out of gearbox.

GEARBOX

1. The pump gearbox shall be of sufficient size to withstand up to 16,000 lb./ft (7,257 kg/m) of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-³/₄" (6.99 cm) in diameter, on both the input and output drive shafts. The drive shaft shall withstand the full torque of the engine.

3. All drive and pump gears shall be manufactured of the highest quality electric furnace chrome nickel steel. All bores shall be ground to size, teeth integrated and hardened, to create an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (There will be no exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. All apparatuses built with automatic transmissions shall be provided three (3) green warning lights to indicate to the operator(s) when the pump has completed the shift from road to pump position. The warning lights will be located as stated: two (2) in the truck driving compartment and one (1) on the pump operator's panel adjacent to the throttle control. For manual transmissions, one (1) green warning light will be provided for the driving compartment. All lights shall have appropriate identification/instruction plates.

CERTIFICATION

The pump will perform and meet the following tests:

- 100% of rated capacity @ 150 PSI net pump press.
- 100% of rated capacity @ 165 PSI net pumps pressure.
- 70% of rated capacity @ 200 PSI net pump pressure.
- 50% of rated capacity @ 250 PSI net pump pressure.

Pump shall be tested at manufacturer under full NFPA suction conditions.

PRIMING PUMP

Trident 3 Barrell Air Primer

The pump shall be furnished with an air driven venturi priming system. The system shall be plumbed to the chassis air. A switch to control the air primer shall be provided on the pump operator's panel.

6" STEAMER INLETS

Two 6" (15.24cm) steamer inlets will be provided, one (1) on the left side and one (1) on the right-side. Both inlets shall have long handle chrome vented caps and a screen.

RELIEF VALVE

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system.

PUMP CERTIFICATION TEST PLATE

A permanently affixed plate shall be installed at the pump operators position that will provide the rated discharge and pressures together with the speed of the engine as determined by the certification test for each unit, the position of the parallel/series pump used, and the no load governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

DISCHARGE VALVES

The valves including the ball shall be constructed of 304 stainless steels. The valves shall be bidirectional with full flow capability. The valves shall be of fixed pivot ball design with a flow pressure rating to meet NFPA-1901 standards. The valve shall have a single piece seat and seal design and shall have an operating pressure of 400 psi. All 3.0" (7.62cm) discharge valves shall be supplied with a true slow close mechanism per NFPA specifications. The valve shall be warranted for a period of ten (10) years on all stainless-steel components, against defects in design and manufacturing processes.

PIPING AND MANIFOLDS

All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless-steel castings shall be a minimum of schedule 40. All NPT pipe thread connections larger than 3/4" connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: rear discharge, tank fill, all 2" and 2 1/2" (5.08 and 6.35cm) pre-connect valves.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.5 through 4". Sizes 3/4", 1" and 5" are rated at 250 pound working and 1000-pound burst pressure. All sizes are rated at 30 HG vacuum. Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1 through 5" for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. 3/4" and 1" male and Victaulic couplings are brass.

PUMP COOLER and ENGINE COOLER VALVES

An engine cooler and pump cooler valve shall be installed in the instrument panel. The valves shall be a 1/4" multi-turn valve installed thru the instrument panel and labeled.

MASTER PUMP DRAIN

The pump shall be equipped with a Class 1 Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all-brass body with a stainless-steel return spring.

U.L. TEST POINTS

Two (2) U.L. test points shall be mounted on the pump panel for testing of the vacuum and pressures. The test points shall be a single piece with individual ports for suction and discharge.

VALVE CONTROLS

Class 1 locking top mount controls shall be provided for valve actuation. The chrome plated zinc handles shall have a recessed area for 2" (5.08cm) round identification tags. The controls shall be locked in any position.

DISCHARGE GAUGES

Individual Class 1 2-1/2(6.35cm) line gauges for each 2" (5.08cm) or larger discharge shall be provided and mounted adjacent to the discharge valve control handle. The gauges shall indicate pressure from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an insulating Sub Z diaphragm

located in the stem. A colored bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

INDIVIDUAL DRAINS

All 2" (5.08cm) or larger discharge outlets shall be equipped with a 3/4" ball valve drain valve or larger.

LEFT SIDE FRONT DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a brass swing out valve with stainless steel ball shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) NH threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the pump panel with a top mount control. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve. The discharge must be capable of flowing 700 GPM or greater.

LEFT SIDE REAR DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a brass swing out valve with stainless steel ball shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) NH threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the pump panel with a top mount control. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve. The discharge must be capable of flowing 700 GPM or greater.

LEFT SIDE AUXILIARY SUCTION

One (1) 2-1/2" (6.35cm) with a brass swing out valve with stainless steel ball shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be controlled at the pump panel with a top mount control. The valve shall come equipped with a chrome plug, chain, inlet strainer, 2-1/2" (6.35 cm) FNH chrome inlet swivel and 3/4" drain valve.

RIGHT SIDE FRONT DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a brass swing out valve with stainless steel ball shall be located on the right-side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) NH threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the pump panel with a top mount control. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve. The discharge must be capable of flowing 700 GPM or greater.

RIGHT SIDE REAR DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a brass swing out valve with stainless steel ball shall be located on the right-side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) NH threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the pump panel with a top mount control. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the

control to indicate pressure. The discharge shall also come equipped with a quarter-turn $\frac{3}{4}$ " drain valve. The discharge must be capable of flowing 700 GPM or greater.

RIGHT SIDE AUXILIARY SUCTION

One (1) 2- $\frac{1}{2}$ " (6.35cm) intake with a brass swing out valve with stainless steel ball shall be located on the right-side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be controlled at the pump panel with a top mount control. The valve shall come equipped with a chrome plug, chain, inlet strainer, 2- $\frac{1}{2}$ " (6.35 cm) FNH chrome inlet swivel and $\frac{3}{4}$ " drain valve.

TANK FILL

One (1) 2"(5.08cm) discharge with a brass swing out valve with stainless steel ball shall be plumbed to the tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2"(5.08cm) valve outlet terminates with 2"(5.08cm) grooved connection. The valve shall be controlled at the pump panel with a top mount control.

CROSSLAY 1 $\frac{3}{4}$ "

One double cross lay shall be installed on apparatus. Each section of the cross lay shall hold 200' of 1- $\frac{3}{4}$ " double jacket fire hose. A 1- $\frac{1}{2}$ " mechanical swivel hose connector shall be used in each cross lay to provide access of hose in either direction. Each cross lay shall have one (1) 2" (5.08cm) brass swing out valve with stainless steel ball. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2"(5.08cm) valve outlet terminates with 2"(5.08cm) grooved connection. The discharge shall be plumbed to the cross lay trays using 2" (5.08cm) schedule 10 stainless steel pipe. The pipe shall terminate in a stainless-steel swivel with 1 $\frac{1}{2}$ " (3.81cm) NH thread. The swivel shall allow the hose to be pulled from either side of the apparatus. The pipe shall be held in place by a 2-piece stainless steel bracket. Each valve shall be controlled at the pump panel with a top mount control. There shall be a Class 1 2 $\frac{1}{2}$ " pressure gauge mounted on the panel near each control to indicate pressure. Each discharge shall also come equipped with a quarter-turn $\frac{3}{4}$ " drain valve. Each discharge shall be foam capable. Each discharge must be capable of flowing 180 GPM or greater.

BOOSTER REEL 1" LINE

One booster reel with 200' of 1" supply line mounted top drivers side of apparatus with rewind switch located and identified on pump panel.

TANK TO PUMP

One (1) 4" (7.62cm) valve shall be installed between the water tank and the pump. The valve shall be a quarter turn type. The valve shall be actuated with an air or manual control. The valve shall be controlled with a switch at the pump panel.

MASTER GAUGES

Class 1 4- $\frac{1}{2}$ "(11.43cm) gauges shall be provided. The master discharge gauge shall indicate pressure from 0 to 600 PSI. The master intake gauge shall indicate pressure from -30hg to 600 PSI. The gauges shall be Interlube filled pressure gauges and handle pressures from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the

gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an insulating Sub Z diaphragm located in the stem.

PRESSURE GOVERNOR and ENGINE MONITORING DISPLAY

Fire Research Pump Boss series PBA401-D00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8". The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4" from the front of the control module. Inputs for monitored information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring.

The following continuous displays shall be provided:

- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Check engine and stop engine warning LEDs
- Engine oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
- Transmission Temperature: shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display
- Pressure and RPM operating mode LEDs
- Pressure / RPM setting; shown on a dot matrix message display
- Throttle ready LED.

The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and nighttime operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs 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 Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only).

The program features shall be accessed via push buttons located on the front of the control module. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

The governor shall operate in two control modes, pressure, and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor and display shall be programmed to interface with a Cummins engine.

3" DELUGE RISER

A deluge riser shall be provided with a 3" waterway and capped for future use. The riser shall be installed behind the rear cross lay. The discharge shall be controlled from the side operator's panel with a 3" inline valve with hand-wheel "Slo-Close" actuation. An indicator shall be provided to show the position of the valve. The piping will be secured to the pump house structure for added strength.

The control rod from the hand wheel to the valve shall be 1/2" stainless steel for extra smooth operation. A 2.5" gauge shall be supplied within 6" above the hand wheel indicating pressure of the deck gun discharge.

FRONT BUMPER DISCHARGE

One (1) 2"(5.08cm) discharge brass swing out valve with stainless steel ball shall be plumbed to the front bumper. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2"(5.08cm) valve outlet terminates with 1 1/2" NST male connection mounted in the front bumper with cap and chain. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve.

INTAKE & DISCHARGE GAUGES

Master Gauges

All Class 1 gauges shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The 4-1/2"(11.43cm) white-faced, Interlube filled pressure gauge shall indicate pressures from 0 to 400 P.S.I. for the discharge, and 30" to 400 P.S.I. for the suction. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low

temperature oil and be sealed from the water system using an isolating diaphragm located in the stem (no exceptions). A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. Two (2) 4-'A" (11.43cm) master pump gauges shall be supplied and mounted next to each other, adjacent to the Captain pressure governor and engine instrumentation. The intake gauge shall be located to the left of the discharge gauge.

DISCHARGE GAUGES

Individual Class 1 2-'A(6.35 cm) line gauges for each 2" (5.08 cm) or larger discharge shall be provided and mounted adjacent to the discharge valve control handle. The gauges shall be white-faced, Interlube filled pressure gauges and handle pressures from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an insulating Sub Z diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

APPARATUS WATER TANK

WATER TANK

The water tank shall have a capacity of **1000 U.S. Gallons**. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

UPF POLY TANK CONSTRUCTION

The UPF Poly-Tank ® IIE shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection.

BOOSTER TANK

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability.

TANK BAFFLES

The transverse swash partitions shall be manufactured of 3/8" PT2E™ polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

TANK SUMP

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

TANK FILL CONNECTION

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

TANK LID

The tank lid shall be constructed of 1/2" thick PT2E™ polypropylene to incorporate a multi three-piece locking design that allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

TANK MOUNTING

The UPF Poly-Tank IIE shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members using hard rubber strips with a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

Although the tank shall be designed on a free-floating suspension principle, it shall be required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

LIFETIME TANK WARRANTY

The tank shall have a lifetime warranty from UPF.

WATER TANK FILL TOWER

The tank shall have a combination vent and manual fill tower, marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter. The tower shall be in the left front corner of the tank. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover.

UPF TANK OVERFLOW

The tank shall be equipped with a minimum of a 4" schedule 40 polypropylene overflow / air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

CRADLE FOR WATER TANK MOUNTING

The tank cradle shall be designed for the specific tank and shall provide support in the areas and locations specified by the tank manufacturer.

TANK DRAIN VALVE

One (1) 1-1/2" tank drain valve(s) shall be provided under the tank sump. The valve shall have a locking lever to prevent accidental draining of the tank.

14 FOOT RESCUE STYLE PUMPER BODY

BODY DESIGN:

The body shall be modular in design, allowing it to be removed and remounted on a new chassis.

BODY MOUNTING:

The body shall be mounted to the chassis frame with "U" bolt type brackets.

Neoprene pads shall be furnished and installed between the body and the "U" bolt mounts to prevent electrolysis and to minimize noise transfer.

The U-bolts shall secure 1" x 3" solid aluminum bar to the frame to which the subframe is welded.

BODY CONSTRUCTION:

The primary body material shall be .190" (3/16") aluminum for the sides, front, rear and top of the body.

The body framing shall be square tubing not less than 2" x 2" x (.125") on a maximum of 16" centers.

The framing shall be fully welded grid design, completely supporting the floor, sides, and the roof for maximum strength and durability.

The body skin shall be fully welded and bonded to the interior framing.

BODY CORNERS - EXTRUDED: The body corners shall be extruded aluminum with a minimum of a 2" radius. This extrusion shall also be used for the perimeter of the roof.

COMPARTMENT TOPS: The compartment tops shall be a minimum of .125" aluminum diamond plate and all roof seams shall be fully welded.

FRONT BODY SHEET: The entire front of the apparatus body shall be constructed of .125" aluminum sheeting.

STONE GUARDS: The front body corners shall have a .125" aluminum diamond plate stone guard added to the lower corners. The stone guards shall be a minimum of 12" high and shall be bolted to the body.

REAR BODY SHEET:

The entire rear body sheet shall be fabricated of .125" aluminum diamond plate.

WHEEL WELL LINERS:

The inside of the rear wheel wells shall be covered with an aluminum inner liner. They shall be bolted in place for ease of servicing the suspension.

WHEEL WELL TRIM PANELS: Aluminum diamond plate shall be installed on the wheel well body panels to protect the paint from scratches. It shall extend from the base of the wheel well panel up to the bottom of the compartment over the wheel well.

FENDERETTES:

The wheel openings shall be trimmed with polished stainless steel fenderettes bolted into place. Fenderettes shall be replaceable in the event of damage.

RUB RAILS: The lower rub rail shall be composed of 6063-T52 alloy-extruded aluminum. It shall receive the body side sheet by means of a groove, which runs continually fore to aft of the module. The body sides (sheets and box beams) shall be welded to the lower rub rail. The rub rail shall stem inboard approximately 2 11/16" at which point there shall be a flange, which shall receive the air core door gasket. The exposed surface of the rub rail shall be chamfered and indented for aesthetic appearance and shall have a satin anodized finish. Atop this inherent rub rail shall be a polished aluminum rub rail with recessed Scotchlite stripe and shall be installed below compartment floor level on each side of the unit and shall extend past the body sides by at least 1 1/4". The function of this rub rail is to protect the body sides from potential collision.

DRIP RAILS: There shall be polished aluminum rain gutters installed over all side and rear compartments and any entry doors.

The rain gutters shall be fastened to the body and removable in case of damage.

Rain gutters that are an integral part of the roof radius will not be acceptable due to the difficulty in replacing due to damage.

FLOOR CONSTRUCTION: Mounted on the chassis frame shall be 1" x 3" aluminum flat bar. Transversing the flat bar and forming the actual subframe shall be 2" square x .250" aluminum tubes running continuously from one bodyside to the other.

The subfloor belly pan shall be fabricated from .125" aluminum sheeting, which will be welded to the subframe.

EXTERIOR COMPARTMENT VENTING:

Each compartment shall have machine stamped louvers in the rear wall.

ROLL UP DOOR CONSTRUCTION:

Each exterior compartment specified shall have a Robinson Series III Robinson brand, or equivalent, roll up door installed. The roll up door is constructed from brush finished anodized aluminum extruded slats, which have a flexible seal between each slat for proper sealing of the door. Each door shall be equipped with a latch type lift mechanism, which latches at the bottom of the door mounting extrusion.

Doors are to remain a brushed aluminum finish.

Each compartment that is equipped with a Robinson, or equivalent, rollup door shall have a "Water Dam" sill installed in the bottom of the compartment to reduce water and other liquids from entering the compartments. The door sill shall act as a scuff plate to reduce paint damage from equipment.

EXTERIOR COMPARTMENT SPECIFICATIONS**DRIVER'S SIDE:**

The front driver's side compartment, L1, shall be approximately 34" W x 68" H x 24" D in the lower portion and 12" deep in the upper portion.

The left center driver's side compartment located over the wheel well, L2, shall be approximately 56" W x 36" H x 12" D.

The left rear driver's side compartment, L3, shall be approximately 54" W x 68" H x 24" D in the lower portion and 12" deep in the upper portion.

OFFICER'S SIDE:

The front officer's side compartment, R1, shall be approximately 34" W x 29" H x 24" D in the lower portion and 12" deep in the upper portion.

The right rear officer's side compartment, R3, shall be approximately 54" W x 29" H x 24" D in the lower portion and 12" deep in the upper portion.

REAR:

There shall be a single compartment located at the rear of the body, RR1, which shall be approximately 20.75"W X 29"H X 24"D.

GROUND LADDERS

The ground ladders shall be stored through the water tank and accessible from the rear of vehicle. Ground ladders provided by the department.

SCBA BOTTLE STORAGE

Six (6) SCBA Bottle storage compartments shall be provided. The compartments shall be 8" diameter by 25" deep located two (2) on each side of the body in the wheel well area.

Each SCBA bottle shall be held in place by a hinged cast aluminum door with a positive latch. The inner storage tube shall be made of high strength polyethylene to provide protection to the surface of the bottles.

STEPS

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds. Steps shall be provided at any area that personnel may need to climb and shall be adequately lighted.

BOLT-ON STEPS

Three (3) Cast Product model 311312-2, or equivalent, step(s) with integral lights shall be installed on the left rear of the apparatus. These steps shall be used to gain access to the hose bed.

SWEEP-OUT CONSTRUCTION

All side body compartments shall have sweep out type floors. All compartments shall be made to the largest practical dimensions to provide maximum storage capacity for fire department equipment.

COMPARTMENT VENTING

Each body compartment shall be properly vented in a manner that will reduce the amount of dirt and water that may enter the compartment. Venting shall be directly to the atmosphere rather than into another compartment which would only spread moisture throughout the body rather than dissipate it.

Additionally, each compartment shall be equipped with drain holes to allow standing water to exit the body without collecting. Each compartment floor shall be covered with DriDeck.

REAR MODULAR GRIP STRUT REAR STEP

A grip strut running board shall be installed on the rear of the apparatus to form a full width step area. The ends of the running board shall be flush with the rub rail that is installed on the body to maintain a uniform appearance.

All running boards shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

STEPPING, STANDING, WALKING SURFACES

All exterior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be constructed of Grip Strut or Textured Tread bright and shall provide a highly slip resistant surface, even when the surface is wet. All interior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be slip resistant when the surface is dry.

The degree of slip resistance shall follow the intent of NFPA 1901 newest version.

REAR TOW EYE

One (1) rear tow eye shall be installed directly below the rear of the chassis frame rails. The tow eye shall be capable of a 15,000 lb. straight pull rating.

HANDRAILS

Handrails shall be constructed of ribbed extruded aluminum of not less than 1-1/4" in diameter. All railing escutcheons and brackets shall be chrome plated and shall be bolted to the body with stainless steel bolts. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point. Handrails shall be provided in the following areas:

Handrail - Entrance On Each Side Of Pump Compartment

- . Entrance on each side of pump compartment.

Handrail - Rear Vert. - Top of Body to Rear Step

- . Rear vertical handrail from top of body to rear step.

SHELVING CHANNELS

There shall be two Strut channels installed in four (4) full height compartment(s) for future shelves.

ADJUSTABLE SHELVES (DEEP)

There shall be four (4) adjustable shelves installed on the apparatus. The shelves shall be constructed of 3/16 aluminum sheet with 2" lips. The shelves shall have an abraded finish. The shelves shall be fabricated in such a manner that liquids readily drain when spilled.

HOSE BED

The hose bed shall be located above the water tank and shall have a minimum capacity of 55 cubic feet. The hose bed shall be approximately 12" deep X 55" wide X 127" long. The hose bed shall be constructed entirely from maintenance free, polypropylene with grooved floor for drainage. The entire hose bed area shall be easily removed for tank access.

HARD SUCTION HOSE RACK

There shall be a hard suction hose rack above the side compartments with the option of storage with ladders through the tank, accessible from rear of vehicle. Capacity shall be provided to store 2 sections of 10' hard suction hose. Two (2) Sections of 6" lightweight suction hose shall be provided with 6" threads and lug handles.

12 VOLT ELECTRICAL SYSTEM

WIRING HARNESESSES

Wiring harnesses shall be the automotive type, engineered specifically for the builder's apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components shall be in an easy to access wiring junction box or the main circuit breaker area. All wire shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with cross linked polyethylene insulation complying with SAE specification J1128. Each wire shall be hot stamp function coded every three inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be number and color coded.

All terminals on the ends of the wiring harness shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used. All terminals shall be pull tested to ensure their integrity.

A main electrical panel shall be in a highly weather resistant compartment. The panel shall contain a board with permanent sockets for relays, diode blocks, and automatic reset circuit

breakers. The board shall be screwed to the compartment and shall have permanent leads, each one routed to a predetermined pin of the correct main bulkhead connector. The bulkhead connectors shall be physically attached to the box in such a way as to afford easy access to the connectors. The connectors shall be the Deutsch series with sealing plugs for any sockets not containing a wire. An "O" ring seal shall be an integral feature of the bulkhead connectors to eliminate the chance of water entering the connection and causing corrosion.

A minimum of six (6), spare circuit breaker sockets shall be supplied. All sockets and equipment shall be clearly labeled.

Any circuit which draws 15 nominal amperes shall be switched through relays. Individual loads shall be wired to individual circuit breakers as much as possible. The circuit breakers shall be sized for the individual load rather than selecting a large circuit breaker and ganging loads on until amperage rating of the circuit breaker is reached.

The main electrical panel shall be fed by three harnesses, one for the cab, one for the pump compartment, and one main harness from the body. The main body harness shall be connected to individual compartment harnesses, for the left and right side of the body. Each main body harness shall be equipped with several spare wires from one end of the harness to the other. At any place where the harness or sub-harness passes through metal, heavy grommets shall be installed to protect it.

CLEARANCE LIGHTS/REFLECTORS

Clearance lights and clearance reflectors shall be installed on the body and/or pump module as necessary to be in full compliance with applicable ICC and DOT codes and regulations.

GROUND LIGHTING

Weldon model 9185-40003 (or equal) lights shall be installed beneath the apparatus in areas where personnel may be expected to climb on and off the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. These areas shall include, but not be limited to, cab doors, side running boards, and the rear step area.

WALKWAY LIGHTS

Lights shall be mounted in a manner that illuminates all walkways and steps for safe operation of the apparatus. These lights shall become illuminated when the parking brake is engaged.

HOSE BED LOADING LIGHT

There shall be one (1) Unity AG deck light installed on the rear of the dunnage area. This light shall provide illumination of the hose bed area. The light shall have capabilities of being adjustable from left to right, as well as up and down, and hold the position it is placed in. A switch shall be installed on the lamp head and power shall be available to the light anytime the battery switch is in the "ON" position.

TAILLIGHTS

There shall be two (2) Whelen LED combination taillight assemblies installed on the rear of the apparatus. Two (2) red stop/tail/turn lights, and two (2) clear back up lights shall be supplied. The lights shall be mounted in a cast aluminum housing, on each side of the apparatus. The lower section of each casting shall contain the lower zone C warning lights as described in the emergency lighting specifications.

COMPARTMENT LIGHTING

All compartments with vertically hinged or roll-up style doors shall be furnished with a Weldon model 9185-40003 light mounted on the ceiling of the compartment or the option of LED rope lighting. Full height compartments shall be equipped with two (2) lights, one at the top of the full depth section and one at the top of the shallow depth section. Each compartment light shall be activated by an automatic door switch.

All compartments equipped with a horizontally hinged, lift-up door shall be equipped with two (2) Weldon model 9185-40003 lights recessed into the inner face of the door, one on each side. These lights shall be activated by an automatic door switch.

Further, lighting shall be installed in any compartment or enclosed, equipment area with four cubic feet of storage capacity or greater, or any compartment with a door opening of 144 square inches or more.

PUMP COMPARTMENT LIGHTS

There shall two (2) light(s) in the pump compartment. Lighting shall be activated by an automatic switch in the pump compartment access door and shall be in a manner that will provide maximum lighting.

APPARATUS WARNING SYSTEM

UPPER ZONE A VISUAL WARNING

One (1) 58" Code Three Model 2158NFPA2 or Whelen all LED light bar with 12 modules shall be provided and installed on the cab roof.

UPPER ZONE B VISUAL WARNING

There shall be two (2) Code-3 model 45BZR or Whelen LED lights with flanges installed in the upper warning zone. The lights shall have a clear lens for primary use of scene lighting.

UPPER ZONE C VISUAL WARNING

There shall be two (2) Code-3 model 550 or Whelen rotating LEDs installed high at the rear of the apparatus. The rotators shall have red and amber lenses.

LOWER ZONE A VISUAL WARNING

There shall be two (2) Code-3 model 45BZR or Whelen LED lights with flanges installed in the lower warning zone. The lights shall have a red lens.

LOWER ZONE B VISUAL WARNING

There shall be two (2) Code-3 model 45BZR or Whelen LED lights with flanges installed in the lower warning zone. The lights shall have a red lens.

LOWER ZONE C VISUAL WARNING

There shall be two (2) Code-3 model 45BZR or Whelen LED lights with flanges installed in the lower warning zone. The lights shall have a red lens.

LOWER ZONE D VISUAL WARNING

There shall be two (2) Code-3 model 45BZR or Whelen LED lights with flanges installed in the lower warning zone. The lights shall have a red lens.

SIREN

One (1) Code Three 3942 100-watt siren shall be furnished and installed in the warning light switch tower between the driver & officer. The hard-wired noise canceling microphone shall be installed on the dash within easy reach of the driver or officer. The siren shall feature Manual, Wail, Yelp, Air Horn, Piercer tones, Radio Repeat and Public Address. It shall have a two (2) year standard warranty from the manufacturer.

SIREN SPEAKER

There shall be a 100-watt siren speaker furnished and installed **in** the front bumper. No surface mounted speakers shall be permitted.

BODY PAINT PREPARATION

After the body and components have been fabricated and assembled, they shall then be disassembled prior to painting so when the apparatus is completed there shall be finish paint beneath the removable components. The body shall be totally removed from the chassis during the painting process to ensure the entire unit is covered. The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting.

All aluminum sections of the body shall undergo a thorough cleaning process starting with a phosphoric acid solution to begin the etching process followed by a complete rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the aluminum surface for greater film adhesion.

After the cleaning process the body and its components shall be primed with an epoxy primer and the seams shall be caulked.

All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be heavily chrome plated. Iron fittings shall be copper underplated prior to chrome plating.

PAINT PROCESS

The paint process shall follow the strict standards as set forth by PPG Fleet Finish Guidelines.

The body shall go through a three-stage paint process: Primer Coat, Base Coat (Color), and Clear Coat. In the first stage of the paint process the body shall be coated with PPG DPHS-52 Low VOC / High Solids epoxy primer to achieve a total thickness of 2-4 mills. In the second stage of the paint process the body shall be painted with PPG DBHS Delta Base Coat. A minimum of two to three coats of paint shall be applied to achieve hiding. In the final stage of the paint process the body shall be painted with PPG DCU-2002 Clear Coat. A minimum of two to three coats shall be applied to achieve a total dry film thickness of 2-3 mills.

As part of the curing process the painted body shall go through a baking process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

After bake and ample cool down time, the coated surface shall be sanded using 3M 1000, 1200, and or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3m Super-duty compound to add extra shine to coated surface. No more than .5 mil of clear shall be removed in this process.

APPARATUS BODY COLOR

The apparatus shall be painted with PPG polyurethane enamel paint. White over red paint scheme is required.

TOUCH UP PAINT

One (1) four-ounce bottle of acrylic enamel touch-up paint shall be supplied.

NFPA COMPLIANT REFLECTIVE STRIPING

Reflective striping shall be applied to the exterior of the apparatus in a manner consistent with the National Fire Protection Association Pamphlet 1901, latest edition. It shall consist of a straight 4" wide stripe along the front of the chassis and along the sides, staying below the tops of the wheel well areas. A 6" wide stripe shall be applied across the rear of the apparatus. The reflective striping shall be white in color. Reflective chevrons shall be affixed to the rear surface of the vehicle.

CAB DOOR REFLECTIVE STRIPING

A minimum of 600 sq. in. of reflective striping shall be applied to the interior of each cab door.

RUB RAIL REFLECTIVE STRIPING

There shall be 2" reflective striping installed in the rub rail channel. The reflective striping shall be diamond grade quality material for increased visibility. The reflective shall be clear in color.

LETTERING

Lettering shall be included at the direction of the department. Vehicle should be installed with unit number holders on driver, passenger and rear of apparatus.

FEDERAL Q2 SIREN

There will be one (1) Federal Q siren provided and recessed in the front bumper or other alternative location. It will be wired to the chassis 12-volt electrical system. It will have a brake switch located on the cab dash and operated by two (2) floor switches mounted in the cab, (1) each side.

TELESCOPIC LED FLOODLIGHT

Two (2) Akron/GFE LED model ELSS-XLDC-PU-TM-38-48 top mount pull up telescopic lights shall be installed. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 4" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamp head shall have eight (8) ultra-bright white LEDs. It shall operate at 12/24 volts DC, draw 13/6.5 amps, and generate 14,000 lumens. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more

than 5.6" deep by 4 1/4" high by 14" wide. The lamp head and mounting arm shall be powder coated white. The floodlight shall be for fire service use.

Location of floodlight shall be top of pump module, one each side

RADIO EQUIPMENT MOUNTING

Provider will mount the customer supplied radio, headsets, and antenna. Programming and final wiring will be the responsibility of the Department's authorized radio dealer.

STANDARD SLIDE-OUT TRAY(S)

Two (2) horizontal slide-out trays shall be provided in *each* the curb side front and rear compartments. The slide-out trays shall be constructed with roller bearing equipped, linearly sliding mechanisms. The tray shall be constructed of formed and welded 3/16" thick aluminum and securely fastened to the floor of the compartment. The outward ends of the equipment rack which protrude beyond the body of the apparatus shall have retroreflective material to indicate an obstruction.

INVERTOR

There shall be one (1) 3,000 watts inverter installed in cabinet of our choice upon specified drawings for the department.

PUMP CERTIFICATION TEST

Manufacture shall provide certified acceptance test.