BID DOCUMENTS

FOR

Owosso Fire Truck Bid

United States Department of Agriculture, Rural Development Grant Project

CITY OF OWOSSO
301 W. MAIN STREET
OWOSSO, MICHIGAN 48867

July 17, 2023

NOTICE TO BIDDERS

Sealed proposals will be received by the city of Owosso for the
OWOSSO FIRE TRUCK BID
United States Department of Agriculture, Rural Development Grant Project

And should be addressed to:

Bid Coordinator
City of Owosso
301 W. Main Street
Owosso, Michigan 48867

Bids will be accepted until **3:00 p.m. Tuesday, August 22, 2023,** for the Owosso Fire Truck Bid at which time bids will be publicly opened and read aloud.

All bids must be in writing and must contain an original signature by an authorized officer of the firm. Electronic bids (i.e., telephone, fax, email, etc.) are not acceptable.

All bids must be accompanied by a certified Cashier's Check or Bid Bond for a sum of not less than 5% of the total bid and shall be made payable to the city of Owosso. This amount shall be forfeited in the case of failure on the part of the successful bidder to sign a contract and furnish satisfactory bonds as required within ten (10) consecutive calendar days after the acceptance of the bid by the city of Owosso.

The bidder agrees that if the city accepts their proposal, the bidder will, within 10 consecutive calendar days after receiving notice of this acceptance, enter into a contract to furnish all labor, equipment, and tools necessary to execute the work at the unit prices named in the bid proposal.

All bids shall clearly contain on the outside of the **sealed** envelope in which they are submitted:

OWOSSO FIRE TRUCK BID

Hard copies of the proposal, contract forms and specifications are on file and may be obtained for a fee in accordance with the city's FOIA Policy at the office of the Bid Coordinator, City Hall, 301 West Main Street, Owosso, Michigan 48867. Bid documents are available at no charge on our website at www.ci.owosso.mi.us or on the MITN website at www.mitn.info.

The city reserves the right to accept any proposal; or to reject any proposal; to waive irregularities in a proposal; or to negotiate if it appears to be in the best interest of the city of Owosso. **The bid proposal shall be valid for a period of 90 days from the date of opening.** A bid valid for a shorter period may be rejected by the city of Owosso. During the bid validity period, the bidder shall maintain its original bid without any change to the proposed unit prices and total price.

INQUIRIES/ADDENDUMS

Addendums will be available on the city's website at www.ci.owosso.mi.us and on the MITN website at www.mitn.info.

All inquiries regarding this bid request must be submitted to Public Safety Chief Kevin Lenkart and received at least seven (7) calendar days prior to the submission and shall be received in, and responded to, in writing, or via FAX at 989-723-0580 or by e-mail to: kevin.lenkart@ci.owosso.mi.us.

INSTRUCTIONS TO BIDDERS

1. Each proposal must be signed by the bidder with his usual signature. Bids by partnerships should be signed with the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and title of the person signing. Proposals by corporations must be signed with the name of the corporation, followed by the signature and designation of the president, vice-president or person authorized to bind it in the matter. Any paperwork not filled out properly or signed will cause the bid to be considered non-responsive and shall be rejected by the city.

2. Proposals, to receive consideration, must be received prior to the specified time of opening and reading as designated in the invitation.

3. Bidders are requested to use the proposal form furnished by the city when submitting their proposals. Envelopes must be **sealed** when submitted and clearly marked on the outside indicating the name of the bid.

4. Proposals having and erasures or corrections thereon may be rejected unless explained or noted over the signature of the bidder.

5. References in the specifications or description of materials, supplies, equipment, or services to a particular trade name, manufacturer's catalog, or model number are made for descriptive purposes to guide the bidder in interpreting the type of materials or supplies, equipment, or nature of the work desired. They should not be construed as excluding proposals on equivalent types of materials, supplies, and equipment or for performing the work in a manner other than specified. However, the bidders' attention is called to General Condition seven (7).

6. Proposals should be mailed or delivered to: Bid Coordinator's Office, City Hall, 301 W. Main Street, Owosso, MI 48867.

7. Special conditions included in this inquiry shall take precedence over any conditions listed under General Conditions or Instructions to Bidders.

8. Insurance coverage – The winning bidder, prior to execution of the contract, shall file with the city copies of completed certificates of insurance naming the city of Owosso as an additional insured party, as evidence that the contractor carries adequate insurance satisfactory to the city.

9. The city of Owosso has a local preference policy for the purchase of goods and services. The policy in part states: *A business located within the city limits and paying real or personal property taxes to the city of Owosso will be granted a six percent (6%) bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. A business located outside the city limits but within Shiawassee County and paying property taxes to the county will be granted a three percent (3%) bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. The preference also applies to subcontractors performing twenty-five percent (25%) or more of the work of a general contract.*

10. The following items must be included with the bid response:
    a. Vendor Proposal
    b. Signature Page & Legal Status/ Acknowledgement of Addendum(s)
    c. Local Preference Affidavit
    e. W-9 Request for Taxpayer ID No. and Certification

BID Proposal

OWOSSO FIRE TRUCK BID

TO: THE CITY OF OWOSSO (HEREINAFTER CALLED THE "CITY")

TO: THE CITY OF OWOSSO (HEREINAFTER CALLED THE "CITY")
The undersigned, having examined the bid proposal forms and specifications, does hereby offer OWOSSO FIRE TRUCK BID, as listed below at the following prices to wit:

Item	Description	QTY	LUMP SUM TOTAL
1	OWOSSO FIRE TRUCK (Including Delivery)	1	
	LEAD TIME FOR DELIVERY		

VARIANCE FROM SPECIFICATIONS: If the bidder is unable to comply with the specifications as outlined, the bidder shall clearly note these variations from the specifications. The bidder may also propose additions to these specifications for the city to consider, but the costs associated with these additions shall be stated separately. The city may award this contract based on any combination of the total bid and/or alternatives.

OTHER SERVICES/ITEMS OFFERED:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

NO ALTERNATE BIDS TAKING TOTAL EXCEPTION

BID PACKAGES SHALL NOT TAKE TOTAL EXCEPTIONS: Bidders are required under this bid invitation to give, for the consideration of the purchaser, a proposal that will comply with the written specifications, drawings, and schedules supplied herein. The specifications supplied represent a compilation of input from all disciplines of users, maintenance and management personnel who are directly affected by the vehicle performance. All the personnel who have direct working contact with the vehicle specified herein base careful consideration pertaining to safety, configuration, construction, and workmanship on working experiences. The intent of this fire truck was created as a result of resolving issues and improvement suggestions that have originated from the personnel most qualified to make such input.

The purchaser makes no claim that potential issues or improvements are included in the specifications supplied herein. The purchaser will consider any valid concern by any bidder and will consider only minor specification exceptions or alternates of equal or better performance, provided that the exceptions are steered toward meeting the intent AND the exceptions are submitted with the final bid proposal on or before the bid deadline.

CAUTION: A bidder who submits a bid that takes “Total Exception” and makes an offering of some “Standard” or “Stock” unit will be viewed by the purchaser as a bidder who did not make, and is not prepared to make, a valid bid, and is not qualified to manufacture the fire truck as specified herein. Alternate bids shall NOT be considered.

On behalf of _____, I hereby submit this proposal for **Owosso Fire Truck Bid** for your consideration. The undersigned acknowledges that this proposal is subject to the General Conditions and the General Specifications included in the contract documents. In submitting this proposal, it is understood that the right is reserved by the CITY to reject any and all proposals and waive any irregularities in the bidding process. The CITY may award this contract based on any combination of the total bid and/or alternates.

Bid proposal by (Name of Firm):

Please check the appropriate box and USE CORRECT LEGAL NAME.

☐ Corporation State of Incorporation:

☐ Partnership List of names:

☐ DBA State full name:

☐ Other Explain:

Signature of Bidder:

Title:

Signature of Bidder:

Title:

Address:

City, Zip:

Telephone:

Email Address:

Signed this Day of 2023

Bidder acknowledges receipt of the following Addenda:

ADDENDUM NO: BIDDER'S INITIALS:

GENERAL CONDITIONS

1. LOCAL PREFERENCE POLICY

The city of Owosso has a local preference policy for the purchase of goods and services. The policy in part states: *A business located within the city limits and paying real or personal property taxes to the city of Owosso will be granted a 6% bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. A business located outside the city limits but within Shiawassee County and paying property taxes to the county will be granted a 3% bid advantage or $2,500, whichever is less, over a business located outside Shiawassee County. The preference also applies to subcontractors performing 25% or more of the work of a general contract.*

2. BID ACCEPTANCE

The city reserves the right to reject any or all proposals. Unless otherwise specified, the city reserves the right to accept any item in the proposal. In case of error in extending the total amount of the bid, the unit prices shall govern. The city objects to any additional terms stated in any documents submitted by the contractor. Performance pursuant to our Purchase Order/Equipment Agreement constitutes a course of conduct consisting of Contractor's Agreement to the terms of our Purchase Order/Equipment Agreement.

3. PAYMENT

Unless otherwise stated by the bidder, time, concerning discount offered, will be computed from date of delivery and acceptance at destination or from date correct bill or claim voucher properly certified by the contractor is received. When so stated herein, partial payments, based on a certified approved estimate by the city of materials, supplies or equipment delivered or work done, may be made upon presentation of a properly-executed claim voucher. The final payment will be made by the city when materials, supplies, equipment or the work done have been fully delivered or completed to the full satisfaction of the city.

4. BID DEFAULT

In case of default by the bidder or contractor, the city of Owosso may procure the articles or services from other sources and hold the bidder or contractor responsible for any excess cost occasioned thereby.

5. UNIT PRICES

Prices should be stated in units of quantity specified.

6. QUOTED PRICES

Unless otherwise stated by the bidder, prices quoted will be considered as being based on delivery to a designated destination and to include all charges for packing, crating, containers, shipping, etc., and being in strict accordance with specifications and standards as shown.

7. SUBSTITUTIONS

Wherever a reference is made in the specifications or description of the materials, supplies, equipment, or services required, to a particular trade name, manufacturer's catalog, or model number, the bidder, if awarded a contract or order, will be required to furnish the particular item

referred to in strict accordance with the specifications or description unless a departure or substitution is clearly noted and described in the proposal.

8. HOLD CITY HARMLESS

The bidder, if awarded an order or contract, agrees to protect, defend, and save the city harmless against any demand for payment for the use of any patented material, process, article, or device that may enter into the manufacture, construction, or form a part of the work covered by either order or contract. Bidder further agrees to indemnify and save the city harmless from suits or action of every nature and description brought against it, for or on account of any injuries or damages received or sustained by any party or parties, by or from any of the acts of the contractor, his employees, subcontractors, or agents.

9. COMPETITIVE BIDDING STATUTES

The laws of the state of Michigan, the charter and ordinances of the city of Owosso, as far as they apply to the laws of competitive bidding, contracts and purchases, are made a part hereof.

10. SAMPLES

Samples, when requested, must be furnished free of expense to the city and, if not destroyed, will upon request be returned at the bidder' expense.

11. BONDS

A certified check or bid bond may be required, payable to the City of Owosso. If so required in the bid documents, a performance bond and labor and material bond in the amounts stated in the bid documents, shall be on file with the city before work commences. The city will determine the amount and sufficiency of the sureties.

12. PROPOSAL GUARANTEE

All checks or bid bonds, except those of the three lowest bidders, will be returned when the bids have been opened and tabulated. The certified checks or bid bonds of the three lowest bidders will be held until the contract documents have been signed, after which remaining certified checks or bid bonds will be returned to the respective bidders.

13. BIDDERS

The city may demand that the contractor file a sworn experience and financial statement setting forth the financial resources, adequacy of plant and equipment, organization, experience and other pertinent and material facts as may be desirable.

14. INSURANCE AND HOLD HARMLESS

To the fullest extent permitted by law the Contractor agrees to defend, pay on behalf of, indemnify, and hold harmless the City of Owosso, its elected and appointed officials, employees, agents and volunteers, and others working on behalf of the City of Owosso against any and all claims, demands, suits, or loss, including all costs connected therewith, and for any damages which may be asserted, claimed, or recovered against or from the City of Owosso, by reason of personal injury, including bodily injury or death and/or property damage, including loss of use thereof, for all actions of the Contractor.

Contractor shall not commence work under this contract until they have obtained the insurance required under this paragraph, and shall keep such insurance in force during the entire life of this contract. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to the City of Owosso. The requirements below should not be interpreted to limit the liability of Contractor. All deductibles and SIR's are the responsibility of Contractor. Contractor shall procure and maintain the following insurance coverage:

a. Worker's Compensation Insurance including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

b. Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than $1,000,000 per occurrence and aggregate. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included. (E) Explosion, Collapse, and Underground (XCU) coverage, if applicable. Limits may be obtained by the use of primary and excess/umbrella liability policies.

c. Automobile Liability including Michigan No-Fault Coverages, with limits of liability not less than $1,000,000 per occurrence, combined single limit for Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

d. Owners' and Contractor Protective Liability: The Contractor shall procure and maintain during the life of this contract, a separate Owners' and Contractor's Protective Liability Policy with limits of liability not less than $1,000,000 per occurrence and aggregate for Personal Injury, Bodily Injury, and Property Damage. The City of Owosso shall be the "Named Insured" on said coverage.

e. Additional Insured: Commercial General Liability and Automobile Liability as described above shall include an endorsement stating the City of Owosso shall be listed as additional insured. It is understood and agreed by naming the City of Owosso as additional insured, coverage afforded is considered to be primary and any other insurance the City of Owosso may have in effect shall be considered secondary and/or excess.

f. Cancellation Notice: All policies, as described above, shall include an endorsement stating that is it understood and agreed Thirty (30) days, Ten (10) days for non-payment of premium, Advance Written Notice of Cancellation, shall be sent to: **(The City of Owosso, Debbie Hebert, Insurance Coordinator, 301 W. Main Street, Owosso, MI 48867).**

g. Proof of Insurance Coverage: Contractor shall provide the City of Owosso at the time that the contracts are returned by him/her for execution, a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable.

If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates and endorsements to the City of Owosso at least ten (10) days prior to the expiration date.

15. PROTECTION OF LAND MONUMENTS AND PROPERTY STAKES

Land monuments or stakes marking property corners shall not be moved or otherwise disturbed except as directed by the city. If any land monuments or lot stakes are moved or disturbed by the contractor, the cost of replacing each land monument or lot stake so moved or disturbed shall be deducted from any money due the contractor, as payment to the city for the cost of replacing said land monument or lot stakes.

16. CONTRACTOR'S RESPONSIBILITY FOR WORK

The contractor shall be responsible for any damages that the work may sustain before its acceptance, and shall rebuild, repair, restore and make good, at its own expense, all injuries and damages to any portion of the work by the action of the elements or from any cause whatsoever before its acceptance. Neither the final payment nor any provision in the contract documents shall relieve the contractor of the responsibility for negligence or faulty materials or workmanship within the extent and period provided by law, and, upon written notice, the contractor shall remove any defects due therefrom and pay for any damaged due to other work resulting therefrom, which shall appear within one year after the date of completion and acceptance.

17. PAYMENT

At monthly intervals commencing after construction has been started, the city will make partial payment to the contractor based on a duly-certified estimate prepared by the city of the work done by the contractor during the preceding four-week period. Each estimate will be submitted to the city council for approval on either the first or third Monday of each month. The city will retain ten percent (10%) of the amount of each such estimate until final completion and acceptance of all work covered by this contract. Before the contractor shall demand final estimates or payment, contractor will furnish to the city, supported by sworn statements, satisfactory evidence that all persons that have supplied labor, materials, or equipment for the work embraced under this contract have been fully paid for the same; and that, in case such evidence be not furnished as aforesaid, such sums as the city may deem necessary to meet the lawful claims of such persons may be retained by the city from any monies that may be due or become due to the contractor under this contract until such liabilities shall be fully discharged and the evidence thereof be furnished to the city.

18. CITY'S RIGHT TO WITHHOLD CERTAIN AMOUNTS AND MAKE APPLICATION THEREOF

Besides the payment to be retained by the city under the preceding provisions of these general conditions, the city may withhold a sufficient amount of any payment otherwise due to the contractor to cover a) payments earned or due for just claims for furnish labor or materials on the project under this contract, b) for defective work not remedied and c) for failure of the contractor to make proper payments to subcontractors. The city shall disburse and shall have the right to act as agent for the contractor in disbursing such funds as have been previously withheld pursuant to

this paragraph to the party or parties who are entitled to payment from it. The city will pay to the contractor a proper accounting of all such funds disbursed for the contractor.

19. OWNER'S RIGHT TO DO WORK

If the contractor should neglect to prosecute the work properly or fail to perform any provisions of this contract, the city, after three (3) days' written notice to the contractor and contractor's surety, may without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost of it from the payment due the contractor.

20. DEFINITION OF NOTICE

Where in any of the contract documents there is any provision in respect to the giving of notice, such notice shall be deemed given to the owner, when written notice is delivered to the city manager, or placed in the United States mail addressed to the city clerk; as to the contractor, when a written notice shall be delivered to contractor's representative at the project site or by mailing such written notice in the United States mail addressed to the contractor at the place stated in the bid proposal as the business address; as to the surety on the performance bond, when a written notice is placed in the United States mail addressed to the surety at the surety's home office or to its agent or agents who executed such performance bond on behalf of the surety.

21. SUBCONTRACTS

The contractor shall not subcontract any work in the execution of this contract without the written consent of the city. The contractor shall be responsible for the acts or omissions of any subcontractor and of anyone employed directly or indirectly by such subcontractor.

22. ASSIGNMENT OF CONTRACT

The contractor shall not assign this contract or any part hereof without the written consent of the city. No assignment shall be valid unless it shall contain a provision that any funds to be paid to the assignee under this agreement are subject to a prior lien for services rendered or materials or supplies for the performance of the work specified in the contract in favor of all persons, firms, or corporations rendering such services or supplying such materials.

23. MAINTAINING TRAFFIC

The contractor shall provide flares, signs, barricades, traffic regulators, etc., to conform to the current *Michigan Manual of Uniform Traffic Control Devices* or as directed by the city. The contractor shall not close any road or street without the permission of the city. If any street or road is to be closed by the contractor, it shall be the responsibility of the contractor to notify the Owosso fire department when the street will be closed and again when the street is open to traffic. Traffic control devices for any detours deemed necessary by the city shall be provided by the contractor. Cost of maintaining shall be incidental to the cost of the project unless otherwise provided.

24. ORDER OF COMPLETION

The contractor shall submit, whenever requested by the city, a schedule of the work showing completion dates. The city may request that certain portions of the work be done before other portions. If so requested, the contractor shall arrange to schedule to meet the request by the owner.

25. USE OF COMPLETED PORTIONS
The city shall have the right to take possession and use any completed or partially completed portions of the work; but such taking possession and use shall not be deemed acceptance. Pending final completion and acceptance of the work, all necessary repairs and adjustments on any section of the work due to defective material, workmanship, natural causes, or other operations of the contractor, other than normal wear and tear, shall be done by and at the expense of the contractor.

26. WATER SUPPLY
The contractor shall secure an adequate water supply for use in construction and for drinking water for his employees. If the city's water is used on the work, the contractor shall make the necessary application and shall pay all costs involved. Connections, piping and fittings for conveying water shall be furnished and maintained by the contractor. Contractor shall pay for water according to the city's established rates.

27. CLEANUP
The contractor shall keep the project free from waste materials or rubbish caused by its employees or work. This includes as a minimum excess excavation or backfill material, broken or rejected materials, empty containers or general debris. The owner may require complete cleanup of certain areas as construction is completed.

28. SUPERVISION
The contractor shall have a superintendent on the job site to coordinate and expedite the various construction activities for the duration of this contract.

29. EQUAL EMPLOYMENT OPPORTUNITY AND OTHER CLAUSES
The contractor shall agree not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined by Michigan Complied Statutes, or national origin. This provision shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rate of pay or other forms of compensation, and selection for training including apprenticeship. The contractor further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provision of the non-discrimination clause.

LOCAL PREFERENCE POLICY

The following affidavit should be completed if a bidder is located within Shiawassee County or intends to sub-contract more than twenty-five percent (25%) to a Shiawassee County based business: The city of Owosso has a local preference policy for the purchase of goods and services as recorded in the city ordinance in section 2-348. "Lowest qualified bidder" defined.

1. The term "lowest qualified bidder," as used in this division, shall mean the lowest bidder having qualifications to perform the work which are satisfactory to the council. The lowest bidder shall be determined based on an adjusted bid tabulation which shall be prepared in the following manner:
   To the bid of any bidder which is neither a city-based business nor a county-based business shall be added an amount equal to six (6) percent of the bid or two thousand five hundred dollars ($2,500.00), whichever is less.

2. To the bid of any bidder which is a county-based business shall be added an amount equal to three (3) percent of the bid or two thousand five hundred dollars ($2,500.00), whichever is less; provided, however, that if no bid is received from a city-based business, no additional amount shall be added to the bid of a county-based business.

3. "Owosso-based business" shall be interpreted to mean a business registered with the county clerk or a corporation registered with the state having a business address within the city limits which pays real and/or personal property taxes levied by the city.

   The term "county-based business" shall be interpreted to mean a business other than a city-based business registered with the county clerk or a corporation registered with the state having a business address within the county which pays real and/or personal property taxes levied by the county.

4. If twenty-five (25) percent or more of a contract for construction or other services is to be subcontracted by a city-based business bidder to a non-city-based business or businesses, or by a county-based business bidder to a non-county-based business or businesses, the adjusted bid shall be calculated by applying the provisions of this section separately to each portion of the contract based on the status of the contractor or subcontractor performing that portion of the contract as a city-based or county-based business.

LOCAL PREFERENCE AFFIDAVIT

In accordance with Section 2-348 of the Owosso city code, the bid from a business located in Shiawassee County shall be adjusted to reflect a preference. In order for the city to calculate the adjustment, the bidder hereby deposes and states that their business address is registered, and is currently paying real and/or personal property taxes in Shiawassee County at the following address:

_____

Registered business address

The affiant further deposes and states that a sub-contract with a business registered, and paying real and/or personal property taxes in Shiawassee County will be executed for a percentage equal to or greater than twenty-five percent (25%) as stated below:

_____

Business name and address of sub-contractor

_____

Percentage of contract

_____

Authorized signature

_____ _____

Date Title

_____

Company name

W-9 INFORMATION FOR LEGAL STATUS

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-9

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.

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

► **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

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

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ►

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

Requester's name and address (optional)

6 City, state, and ZIP code

7 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 line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

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); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

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 for Part II, later.

Sign Here	**Signature of U.S. person** ►	**Date** ►

General Instructions

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

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

By signing the filled-out form, you:

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, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting,* later, for further information.

Note: If you are a U.S. person and 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 under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 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 section 1446 withholding on your share of partnership income.

In the cases below, the following person must give 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.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 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, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% 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, payments made in settlement of payment card and third party network transactions, 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 instructions for Part II 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 *Exempt payee code,* later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships,* earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code,* later, and the Instructions for the Requester of Form W-9 for more information.

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

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. 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 line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. 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 line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

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 U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—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 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[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 reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

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.

If you are a single-member LLC that is disregarded as an entity separate from its owner, 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 *What Name and Number To Give the Requester,* later, 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 SSA 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. Go to *www.irs.gov/Forms* to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to *www.irs.gov/OrderForms* to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and 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 U.S. 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, 4, or 5 below indicates 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 line 1 must sign. Exempt payees, see *Exempt payee code,* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

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 made in settlement of payment card and third party network transactions, 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), ABLE accounts (under section 529A), 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) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor[2]
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee[1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner[1]
6. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity[4]
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee
14. 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
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations 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,* earlier.

***Note:** The 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, 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 Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic 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 (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at *spam@uce.gov* or report them at *www.ftc.gov/complaint.* You can contact the FTC at *www.ftc.gov/idtheft* or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see *www.IdentityTheft.gov* and Pub. 5027.

Visit *www.irs.gov/IdentityTheft* 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. commonwealths and 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.

INSTRUCTIONS TO BIDDERS

Bidders are requested to read the complete bid invitation carefully and submit their proposals in strict accordance with the requirements set forth.

Any questions regarding this specification must be submitted in writing and be received by the Fire Chief a minimum of seven (7) business days prior to the bid opening date. Clarifications, corrections and/or changes shall be sent out in writing via fax to all prospective bidders.

The purchaser reserves the right to reject any or all bids or accept any bid presented which meet or exceed these specifications and which the purchaser may deem shall be in the best interest of the City regardless of the amount proposed.

The complete apparatus shall be manufactured within the continental United States. Vehicles manufactured outside of the continental USA shall not be considered. No exceptions will be permitted to this section of the document.

EXCEPTIONS TO SPECIFICATIONS

It shall be mandatory for any prospective bidder that deviates from the proposed specifications to give a full description of all deviations.

When the bidder checks the "yes" column in the bid the bidder is making testimony that the bidder is in full compliance with the entire paragraph.

Where bidder's specifications and/or construction differ in any way from the bid specification, a full and complete description in specification shall be required. Drawings shall also be required to show alternative construction methods. Partial descriptions, or general clarifications covering groups of sections of the specification, shall be unacceptable and shall be cause for complete rejection of the bid.

Proposals taking total exception to the purchase specifications contained herein shall not be accepted and the bidder's proposal shall be deemed non-responsive and treated accordingly.

SPECIAL NOTE ON SUBSTITUTIONS

Where a subassembly manufacturer’s name or “brand” name for a product is given in a specification description, the product identified is the desired product to use. Manufacturers using a product other than the named product must take an exception to the paragraph. Where the words “or equal” are used in a paragraph in reference to an identified product, an apparatus manufacturer can make an equal product substitution without taking an exception to the specification paragraph.

Each bidder is encouraged to provide descriptive literature with their bid packet on any equipment or features that are proposed in lieu of those named and/or described in the specifications. Literature shall be originals and will be retained by the department for evaluation purposes. Such literature shall be required before the pre bid conference on any equipment proposed by the successful bidder that is unfamiliar to the department.

BID CLARIFICATIONS

Each clarification shall refer to the bid specification page number and paragraph. Any such clarification that appears vague or misleading shall be considered an exception. Complete clarifications are required describing the reason for the deviation. The completed vehicle shall be inspected upon delivery for compliance with specifications. Deviations shall not be tolerated and shall be cause for rejection of the cab and chassis unless they were originally listed in the bidder's proposal.

BID DOCUMENTS REQUIRED

The bidder shall utilize this document in its bid. The bidder shall indicate opposite each item if they comply with that paragraph by checking "yes" or "no".

The bidder shall provide detailed information on the materials to be used to construct all parts of the apparatus. A bidder's use of terms such as "intent" are considered vague and unacceptable responses will disqualify the bid.

Copies of the bid document electronically reproduced used as a response specification are grounds for immediate disqualification of the bidder's submission.

No exceptions will be permitted to this section of the document.

CONTRACT AWARD

The contract shall be awarded to the lowest and best bidder meeting these specifications. Since the complete vehicle materials specified are commercially available, these specifications shall in no way be considered proprietary. Each bidder shall submit on their proposal page a single line-item price for all items listed in the specifications. Price shall be based on payment upon receipt of the accepted complete vehicle by the Fire Department.

No discounts, options, or prepayment schedules shall be listed on the proposal page. All such items shall be listed on a separate page entitled OPTIONS and may or may not be considered at the discretion of the Fire Department.

SUBMISSION OF BID REQUIREMENTS

Bids shall be submitted in accordance with the following instructions:

1. The bid form provided herein shall be completed and returned with the appropriate "yes" or "no" marked by each paragraph in the "Bidder Complies" column. A paragraph indicated with both the "yes" and "no" column marked shall be considered non-responsive and treated accordingly.

2. Each bidder shall submit their own proposal specifications, detailing their construction. This is necessary to evaluate each bidder's actual intent of building the equipment as specified herein. The bidder's proposal format shall be the same order as these specifications to allow the Fire Department to compare all bids easily and prevent confusion. Failure to comply shall be cause for rejection of the bid.

3. Each bid shall include the weight ratings, wheelbase, principal dimensions, transmission and axle ratios, and a certified brake horsepower curve showing the maximum no load governed speed of the engine proposed.

4. Failure to submit detailed information or drawings where specified herein shall result in rejection of the bid.

5. Bids shall be returned in a sealed envelope clearly marked "BID FOR FIRE APPARATUS". Facsimile bids are not acceptable.

6. Verbal bids and changes in the bid price after the bid opening prior to award shall not be allowed. Any such attempt shall not be accepted and cause immediate rejection of the entire bid.

ORIGIN OF MANUFACTURER

Any manufacturer submitting a proposal or bid to these specifications shall meet the following conditions:

- The manufacturer of the apparatus herein specified shall be wholly owned (100%) and managed by a company, corporation and/or parent company that is wholly based and permanently resides in the United States of America.

- The company, corporation, and/or parent company, and all assets belonging to such, shall be wholly owned, and managed by the entities specified above.

- Any proposal, bid or response to these specifications by any foreign based, owned, or managed (in part or in whole) company, corporation and/or parent company, shall be cause for immediate rejection.

- Any proposal, bid or response to these specifications by any company, corporation and/or parent company, that is owned, operated, managed, or held in contract, in part or wholly by a foreign interest partnership or other agreement, shall be cause for immediate rejection.

There shall be no exception to these requirements.

Y___N___

ONLINE CUSTOMER INTERACTION

The manufacturer shall provide the capability for online access through the manufacturer's website. The Fire Department shall be able to view digital photos of their apparatus during phases of the construction.

Y___N___

MANUALS AND DOCUMENT INFORMATION

Upon delivery of the apparatus, the manufacturer shall supply complete operation and maintenance manuals covering the complete apparatus as it is delivered.

The manuals shall include, but not be limited to all component warranties, users' manuals and information for supplied products, record of apparatus construction details and whatever other pertinent information is available to supply to the customer regarding the apparatus.

Y___N___

COMPONENT INFORMATION

The manufacturer shall also supply a manufacturer's record of apparatus construction details, including the following information:

- Owner name and address
- Apparatus manufacturer, model, and serial number
- Chassis make, model, and serial number
- GAWR of front and rear axles
- Front tire size and total rated capacity in kilograms
- Rear tire size and total rated capacity in kilograms
- Chassis weight distribution in kilograms with water (if applicable) and manufacturer mounted equipment (front and rear)
- Engine make, model, serial number, rated horsepower, related speed and no load governed speed
- Type of fuel and fuel tank capacity
- Electrical system voltage and alternator output in amps
- Battery make and model, capacity in CCA
- Paint numbers
- Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall vehicle (with the water tank full (if applicable) but without personnel, equipment, and hose)
- Written load analysis and results of the electrical system performance tests
- Transmission make, model, and type
- Pump to drive through the transmission (yes or no)
- Engine to pump gear ratio and transmission gear ratio used
- Pump make and model, rated capacity in gallons per minute, serial number, and number of stages
- Pump manufacturer's certification of suction capability
- Pump manufacturer's certification of hydrostatic test
- Pump manufacturer's certification of inspection and test for the fire pump
- Copy of the apparatus manufacturer's approval for stationary pumping applications
- Pump transmission make, model and serial number
- Priming device type
- Type of pump pressure control system
- The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no load governed speed
- Certification of the water tank capacity

Y___N___

WARNING AND INFORMATION LABELS

All warning and informational labels (non-vendor specific) shall be provided in compliance with (NFPA) 1901, Standard for Automotive Fire Apparatus, and installed in the appropriate locations to alert the operator of potential hazards and operating instructions.

Y___N___

APPARATUS INFORMATION LABEL

There shall be a high-visibility label installed in a location clearly detectable to the driver while in the seated position.

The label shall indicate the following specified information.

Overall Height (feet and inches)
Overall Length (feet and inches)
Overall GVWR (tons or metric tons)

Y___N___

FLUID REQUIRED LABEL

There shall be a lubrication plate mounted inside the cab listing the type and grade of lubrication used in the following areas on the apparatus and chassis:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid
- Drive Axle Lubrication Fluid
- Generator Lubrication Fluid (where applicable)
- Tire Pressures

Y___N___

CHASSIS SEATING REQUIRED LABELING

There shall be a high-visibility label installed in a location clearly detectable from each seating position.

The label shall read the following:

"DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT"

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per (NFPA) 190 standards. It shall be located in an area visible to the driver.

Y___N___

CAB HELMET WARNING LABEL

There shall be a high-visibility label installed in a location clearly detectable from each seating position.

The label shall indicate the following specified information.

“DO NOT WEAR HELMET WHILE SEATED”

Y___N___

PUMP PERFORMANCE PLACARD

There shall be a permanent placard provided and installed with the pump performance data and serial numbers. The placard shall be installed at the pump operator's panel.

Y___N___

LIABILITY INSURANCE COVERAGE

In order to protect the department and its personnel, the bidder shall show proof that it has liability insurance in force. A certificate of coverage shall be included in the bid package. Failure to carry liability insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall keep in force at least the following minimum limits of commercial general liability insurance and coverage shall be written on the liability form:

Each Occurrence: $1,000,000
Products/Completed Operations Aggregate: $2,000,000
Personal and Advertising Injury: $1,000,000

AUTOMOBILE LIABILITY INSURANCE

The successful bidder shall keep in force at least the following minimum limits of automobile liability insurance and coverage shall be written on the liability form:

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

UMBRELLA LIABILITY INSURANCE

The successful bidder shall keep in force at least the following minimum limits of umbrella liability insurance:

Each Occurrence: $3,000,000
Aggregate: $3,000,000

EXCESS LIABILITY INSURANCE

The successful bidder shall keep in force at least the following minimum limits of product liability insurance:

Each Occurrence/General Aggregate: $4,000,000

Y___N___

CUSTOM CHASSIS - SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufactures their products using an integrated approach, including the rolling chassis and apparatus body modules being fabricated and assembled on the bidder's premises".

The warranties relative to the chassis, pump module, and apparatus body (excluding vendor component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e., body and chassis).

The chassis shall be designed and manufactured by the apparatus builder in the builder's facility and shall be designed and constructed specifically for heavy duty fire service use, with adequate strength and capacity for all components as detailed withing these specifications.

The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least fifty (50) years.

The chassis shall be equipped with state-of-the-art technology to not only enhance the operation of the actual apparatus, but to ease the workload of the crew and provide the highest level of safety & survivability, while increasing the longevity and serviceability of the vehicle itself.

The bidder shall provide evidence that they comply with these requirements.

NO EXCEPTIONS WILL BE PERMITTED TO THIS SECTION OF THE DOCUMENT.

Y___N___

GENERAL WARRANTY

Upon delivery, the manufacturer shall provide a three (3) year new vehicle general warranty and is limited to chassis and apparatus systems and components, and excludes engine, transmission, and axles (see additional warranties provided).

All components of the vehicle are warranted for a three (3) year period from vehicle delivery, unless otherwise stated elsewhere.

This warranty is issued to the original purchaser of the vehicle only.

Y___N___

CAB STRUCTURAL WARRANTY

The cab will be warranted against structural defects in material and workmanship under normal use and service for a period of ten (10) years from date of delivery.

Y___N___

BODY STRUCTURAL WARRANTY

The structural stainless steel apparatus body will be warranted against structural defects in material and workmanship under normal use and service for a period of ten (10) years from date of delivery.

Y___N___

PAINT WARRANTY

A Prorated Paint Warranty shall be provided by the manufacturer for a period of up to ten (10) years pending the purchase and selection of the extended warranty period of 5, 7 or 10 years.

The paint finish for the cab and body will be warranted against structural defects in material and workmanship under normal use and service for the first of 36,000 miles or the period specified below:

Top Coat and Appearance Gloss, Color Retention, Cracking		Coating System, Adhesion, Flaking, Blistering, Bubbling	
0 to 72 months	100%	0 to 36 months	100%
73 to 120 months	50%	37 to 84 months	50%
		85 to 120 months	25%

To clarify, the chart above does not extend the warranty period for the Paint Warranty beyond the 36,000 actual miles from the delivery date.

Y___N___

PAINT WARRANTY - 10 YEARS

The Paint Warranty shall be provided for a period of ten (10) years.

Y___N___

CHASSIS FRAME RAILS WARRANTY

The custom chassis frame and crossmembers will be warranted for the expected life of the vehicle, which the expected life is twenty (20) years from the date of delivery.

Y___N___

STAINLESS STEEL PLUMBING WARRANTY

A Stainless Steel Plumbing warranty shall be provided by the apparatus manufacture for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years from the date of delivery.

Y___N___

BID DRAWING REQUIRED

The bidder shall submit two (2) copies of a D-size (full size) engineered construction drawing with its bid. No bids will be considered without complete engineered construction drawing submitted with the bid. Submitted drawing must be specifically for the proposed apparatus and depict all major specified components.

The drawing shall show the following minimum views:

- Front View
- Streetside with proposed chassis
- Curbside with proposed chassis
- Rear View
- Top View with proposed chassis

The drawing shall contain, but not limited to, the dimensions for the overall length (in feet and inches), overall height (in feet and inches), wheelbase, angle of approach, angle of departure, overall width of the apparatus, hose bed volume dimensions indicating the hose bed width, length, and height.

Submission of "similar to" or "standard" drawings, or statements referencing submission of drawings after award of contract, will disqualify the bid.

No exceptions will be permitted to this section of the document.

Y___N___

UL TESTING AND CERTIFICATION:

The apparatus upon completion will be tested and certified by Underwriters Laboratories, LLC. The certification tests will follow the guidelines outlined in the current edition (NFPA 1901) Standard for Automotive Fire Apparatus.

There shall be multiple tests performed by the manufacturer and Underwriter's Laboratories, LLC when the apparatus has been completed. The manufacturer shall provide the completed UL acceptance Test Certificate(s) to the purchaser at time of delivery.

The tests conducted on the apparatus shall include, but not be limited to:

Y___N___

PUMP PERFORMANCE TEST AND CERTIFICATION:

The fire pump and plumbing shall be tested, approved, and certified to comply with all NFPA 1901, Standard for automotive Fire Apparatus, applicable regulations in effect. The manufacturer shall furnish the completed Test Certificate(s) to the purchaser at the time of delivery.

Y___N___

LOW-VOLTAGE ELECTRICAL SYSTEM PERFORMANCE TESTING

The apparatus low-voltage electrical system will be tested and certified.

Tests shall be performed when the air temperature is between 0 degrees Fahrenheit and 110 degrees Fahrenheit (–18 degrees Celsius and 43 degrees Celsius).

The following three (3) tests defined in NFPA shall be performed in the order in which they appear. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

Reserve Capacity Test:

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged.

The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes.

All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure of the battery system.

Alternator Performance Test at Idle:

The minimum continuous electrical load shall be activated with the engine running at idle speed.

The engine temperature shall be stabilized at normal operating temperature.

The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

Alternator Performance Test at Full Load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed.

The test duration shall be a minimum of 2 hours.

Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the system required in NFPA 13.3.4, or a system voltage of less than 11.8 V dc for a 12 V nominal system or 23.6 V dc for a 24 V nominal system, for more than 120 seconds, shall be considered a test failure.

Low Voltage Alarm Test:

Following the completion of the above tests, a Low Voltage Alarm Test will be performed in the manner prescribed.

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates.

The battery voltage shall be measured at the battery terminals.

The test shall be considered a failure if the alarm has not yet sounded 140 seconds after the voltage drops to 11.70 V for a 12 V nominal system or 23.4 V for a 24 V nominal system.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

DOCUMENTATION:

The apparatus manufacturer shall provide the results of the low-voltage electrical system performance test, certified in writing, with the documentation provided to the purchaser at the time of delivery of the completed apparatus.

The test results shall consist of the following documents:

(1) Documentation of the electrical system performance tests
(2) A written electrical load analysis, including the following:

- The nameplate rating of the alternator.
- The alternator rating under the conditions specified in NFPA 1901 (current edition).
- Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load.

- Each individual intermittent electrical load.

Y___N___

MAXIMUM OVERALL LENGTH REQUIREMENT

The apparatus specified shall be constructed with no restrictions to the maximum overall length.

Y___N___

MAXIMUM OVERALL HEIGHT REQUIREMENT

The apparatus specified shall be constructed with no restrictions to the maximum overall height.

Y___N___

MAXIMUM WHEELBASE REQUIREMENT

The apparatus specified shall be constructed with no restrictions to the maximum wheelbase.

Y___N___

MAXIMUM OVERALL WIDTH OF ONE-HUNDRED INCHES

The apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Overall Width of one hundred (100.00) inches.

This dimension shall include the primary construction of the apparatus body and chassis cab. Any peripheral items shall not be incorporated into this measurement.

The peripheral items included, but not limited to, are: Fenderettes, Mirrors, Lights, Handrails, Front Bumpers, Cab Steps, Overlays, Etc.

Y___N___

ANGLE OF APPROACH REQUIREMENT

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of the NFPA 1901 Guideline.

Y___N___

ANGLE OF DEPARTURE REQUIREMENT

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of the NFPA 1901 Guideline.

Y___N___

IN-SERVICE WEIGHT

The apparatus shall be designed to provide an equipment allowance up to 2500 pounds in compliance with the current edition of the NFPA 1901 Guideline.

Y___N___

PAINT CODES

Paint Information:

Paint Manufacturer: **PPG is HME Standard Paint used**

CAB EXTERIOR

Single Color:
Primary color:

Primary paint code:

Two Tone Colors: (Must Select Two-Tone Paint Scheme 40-Q0-XXXX for Custom Chassis)
Upper paint color:
Upper paint code:
Lower paint color:
Lower paint code:

Paint Break Line (Scheme #):_

Note: If option for a Custom Two-Tone Paint is selected a drawing, with dimensions, must be attached for order entry. The standard HME paint schemes will be used if no paint scheme is specified for the 1871 & Spectr II respectively. The S-01 paint scheme will be used if no paint scheme is specified for the SFO.

RIMS

Color Painted Rims Color (N/A for Aluminum Rims): *
Color Painted Rims Code (N/A for Aluminum Rims): *
*Unless noted otherwise, the cab lower color will be used when painted rims are selected.

BODY EXTERIOR

Note: For painted body components, must make selections in QW body section, see 50-20-XXXX

Color Body Panels Color:*
Color Body Panels Code:*

If the hose bed sides are painted are they the same color as the body panels?:
If not complete the following:

Hose bed Wall Color:*
Hose bed Wall Code:*

Y___N___

FACTORY PRE-CONSTRUCTION CONFERENCE

The factory authorized Distributor shall be required, prior to manufacturing, to have a pre-construction conference at the manufacturing facility with a factory representative present and with One (1) individual(s) from the OWOSSO FIRE DEPARTMENT to finalize all construction details.

The factories authorized distributor shall, at their expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

Y___N___

FINAL INSPECTION CONFERENCE

The factory authorized Distributor shall be required, during manufacturing, to have a final completion inspection conference at the site of the manufacturing facility with One (1) individual(s) from the OWOSSO FIRE DEPARTMENT to inspect the apparatus after construction.

The factories authorized distributor shall, at their expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

Y___N___

PUMP AND APPARATUS OPERATION TRAINING

Fire Department personnel will be trained as to the use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus, and supplied equipment.

The training shall be provided by an Authorized Sales Representative technician who shall remain at the Fire Department for one (1) day (not less than eight (8) hours) to provide instruction to all personnel, or as instructed by the Chief of the Department.

All meals, motel, and travel costs are the responsibility of the successful bidder.

After acceptance of the fire apparatus, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the apparatus and the associated equipment.

Y___N___

== CORE Pumper 22 - 1871 L9 Engines Cab & Chassis - 7.001 06/01/23 ==

Y___N___

CHASSIS FRAME

The frame shall be designed to industry standards. The manufacturer shall provide a lifetime frame side rail warranty to the original purchaser of the chassis. The frame rails shall be 10.50" x 3.50" x .375" heat treated steel.

A 3/4 length inner frame side rail liner with dimensions of 9.687" x 3.125" x .3125" shall be provided for additional strength and reduce deflection. The frame liner shall extend from the centerline of the front axle and taper 45 degrees forward and shall extend to the rear of the main frame rail.

The frame side rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 30.38 cubic inches, in the frame liner area, calculated by using the square corner shape method. The resulting frame rail resistance to bending moment shall be 3,341,800 inches per pound per rail.

To ensure the maximum clamp load for the fastener prevailing torque the crossmembers shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts. Flanged head fasteners shall not be acceptable. The top of the frame rails shall be free of bolt heads.

Frame engine cutouts shall be made with a plasma torch to minimize the heat affected zone of the cut. All cutouts shall have a minimum of 6.00 inch transitions between rail flange cut depths to reduce the stress concentrations throughout the cutout area. The root of all transition areas shall have a minimum of a 2.00 inch radius to reduce stress concentrations at the root.

Y___N___

FRAME RAIL FINISH

The main frame rails, frame liner and main frame cross-members behind the pump shall galvanized to reduce the effect of harsh road chemicals.

Y___N___

FRAME FASTENERS

Fasteners employed to attach the main frame rails to the main frame cross-members shall be Zinc plated to reduce the effect of harsh road chemicals.

Y___N___

CAB MAIN FRAME CROSSMEMBER

In addition to the rear cab support cross-member there shall be a main frame cross member mounted in the rear cab area. This cross-member shall be a wide base flanged design to provide frame spacing and excellent strength to prevent frame paralleling. Every frame cross-member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

Y___N___

FRONT AXLE

The front axle shall be a Hendrickson STEERTEK™ NXT with a 21,000 lb. capacity.

Y___N___

CRAMP ANGLE

The chassis shall have a turning cramp angle of 45-degrees. Both left and right turns have a full 45° cramp angle with tires and wheels mounted on the axle and installed in the chassis.

The 45°cramp angle is achieved irrespective of options such as front suctions and disc brakes.

Y___N___

FRONT AXLE OIL SEALS

The front axle shall be equipped with oil bath type oil seals as supplied on the axle from the axle manufacturer. The spindles shall be equipped with transparent covers for oil level inspection.

Y___N___

FRONT AXLE DISC BRAKES

MERITOR DiscPlus, EX-225, air disc brakes shall be installed on the front axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

Y___N___

FRONT AXLE / SUSPENSION, STEERTEK™ NXT (21k GAWR)

The front axle and suspension shall be a Hendrickson STEERTEK™ NXT high-capacity fabricated front steer axle system.

This advanced suspension integration uses parabolic springs to increase wheel travel and lower spring rate for improved ride quality, and proprietary threaded pin bushings to increase roll stiffness. The rigid axle beam has a box-shaped cross section to resist horizontal, vertical, and twisting forces more effectively than I-beam axles. Passive hydraulic dampers are custom tuned for parabolic leaf springs to achieve the ultimate ride and handling. Progressive-rated bump stops handle high dynamic loads without harshness.

This front axle and suspension system shall be designed for heavy duty custom fire apparatus with a maximum capacity of 21,000 lbs.

Y___N___

SHOCK ABSORBERS

Double acting hydraulic shock absorbers are to be installed.

Y___N___

STEERING SYSTEM

The steering shall be equipped with dual SHEPPARD integral power steering gears. The engine shall be equipped with a gear driven pump.

The power steering fluid shall be monitored electronically and shall send a visual warning to the instrument panel when the fluid level falls below normal.

A remote steel reservoir shall be provided with the ability to check and fill the fluid level when the cab is in the raised position.

Y___N___

FRONT TIRES

The front tires shall be Goodyear 425/65R22.5 (L) tubeless radial Armor Max MSA mud/snow tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

Y___N___

FRONT STEEL RIMS

Hub piloted, acrylic e-coat, painted steel disc wheels shall be supplied on the front axle.

Y___N___

SINGLE REAR AXLE

The rear axle shall be a MERITOR model "RS-25-160" with a 27,000# capacity for the fire service.

Y___N___

MERITOR DIFFERENTIAL

The rear axle shall contain a Meritor 160 Series differential with an 18.00 inch diameter ring gear utilizing hypoid-Generoid gearing and a 2.25 inch diameter axle shaft.

Y___N___

AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

Y___N___

REAR AXLE OIL SEALS

The rear axle shall be equipped with premium oil bath type oil seals as supplied on the axle from the axle manufacturer.

Y___N___

REAR AXLE DISC BRAKES

MERITOR/ROCKWELL DiscPlus, EX-225, air disc brakes shall be installed on the Meritor/Rockwell single rear axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

These disc brakes shall be rated for a maximum of 27,000# GAWR.

Y___N___

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 62 to 65 mph at engine governed RPM.

Y___N___

NFPA TOP SPEED STATEMENT

NFPA-1901, 2016 Edition - 4.15.2: The maximum top speed of fire apparatus with a GVWR over 26,000 lb. (11,800 kg) shall not exceed either 68 MPH (105 km/hr.) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA-1901, 2016 Edition - 4.15.3: If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb. (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 MPH (105 km/hr.) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

The speed selected on this apparatus exceeds 60 MPH (105 km/hr.) and the customer is aware of NFPA-1901 and the top speed that will be achieved with the finished apparatus.

Truck gearing shall be such to provide for a customer requested top speed at engine governed RPM. If the top speed exceeds NFPA requirements listed above the engine ECM will have road speed limiting programmed so the maximum attainable speed that will not exceed that limit. This is field adjustable with Cummins Insite.

Y___N___

SINGLE AXLE REAR SUSPENSION

A Reyco Granning Model 79KB rear suspension shall be provided and installed. The suspension system shall have a GAWR of 27,000 pounds.

The suspension shall consist of a multi-leaf parabolic spring pack for increased ride compliance and will be provided with adjustable torque arms and a single piece track rod for added stability and easy alignment.

Y___N___

AIR SYSTEM

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The system shall consist of three (3) reservoirs with a 4,362 cu. in. volume. The air system shall consist of the following components:

Dual air system with dual gauges and a warning light and buzzer. A spring actuated parking brake built into the rear axle brakes with a manual control and warning light the in cab. These shall automatically apply in case of air system failure. A mechanical means of releasing the spring brake shall be provided in the event of total loss of air pressure.

A quick build up system shall be provided, capable of building enough air pressure to release the spring brake in less than thirty (30) seconds, when starting with the entire air system at zero pounds pressure.

The brake system shall be a split system. One (1) system serving the rear brakes and one (1) system serving the front brakes. The two (2) systems shall be connected with a double check valve that shall automatically shuttle air from the front system to the rear system should loss of air pressure occur. This system shall also modulate the amount of air so the spring brakes shall apply in direct relationship to the amount of pressure applied to the treadle valve.

The brake system shall be equipped with a Bendix SR-7 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

The spring brakes shall be piped in such a manner that if the treadle valve is depressed while the spring brakes are applied, the spring brakes shall release and remain released as long as the treadle valve is depressed. They shall reapply immediately when the treadle valve is released.

The piping in the air system shall be 2-ply nylon reinforced color coded tubing for all stationary lines.

Y___N___

AIR DRYER

The air system shall include a BENDIX AD-9 air dryer.

The air dryer shall have a spin on desiccant cartridge.

The air dryer shall incorporate an integral turbo cutoff valve. The turbo cutoff valve shall close the path between the air compressor and the air dryer purge valve during the compressor "unload" cycle. This shall allow the air dryer to purge the water and contaminates without any loss of turbo boost or engine horsepower.

A 12-Volt heated moisture ejector shall be an integral part of the air dryer. This heater shall be thermostatically controlled. The electrical connection for the heater shall use a sealed electrical connector to protect against moisture and corrosion.

The use of this air dryer increases the base air system volume by 200 cubic inches.

Y___N___

DEDICATED AIR HORN RESERVOIR

One (1) 2181 cu. in. additional reservoir shall be connected to the chassis air system to provide an air supply for the chassis air horns. This reservoir shall include a pressure protection valve on the inlet side to allow full use of this tank without draining air from the chassis air system.

Y___N___

AUTOMATIC MOISTURE EJECTORS

All air reservoirs of the chassis air system shall be supplied with completely automatic heated moisture ejectors. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained off to the atmosphere.

Y___N___

MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM

A four channel, single rear axle model, MERITOR/ROCKWELL/WABCO ABS Braking System shall be supplied.

A frame mounted electronic control unit (ECU) shall monitor and control wheel speed during braking. Wheel sensors, constantly monitoring wheel speed, send information to the ECU. If a wheel begins to lock the ECU transmits an electrical impulse to modulator valves that can apply, release, or hold the air pressure in the brake chambers. The rapid modulation of air pressure prevents wheel lock-up and increases driver control.

This ABS system shall be a 4S/4M system with four (4) wheel speed sensors and four (4) modulator valves.

If a fault occurs in one wheel, that wheel shall have normal (non-ABS) brake function. The other wheels shall continue to provide the ABS function. If the ABS system should fail completely, the brake control shall be returned to normal (non-ABS) braking.

An ABS warning light shall be installed on the driver's dash message center. This warning light shall cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four (4) MPH. The light shall illuminate in other conditions to warn of an ABS system failure and shall illuminate when the diagnostic function is activated.

Y___N___

MUD/SNOW SWITCH

The Meritor/Rockwell/Wabco ABS shall be supplied with a mud and snow switch. This switch shall increase the ATC threshold to allow a momentary wheel slip to obtain traction under extreme mud and snow conditions.

Y___N___

MERITOR/WABCO STABILITY ENHANCEMENT SYSTEM

A Meritor / Wabco Roll Stability Control (RSC) System shall be provided on the apparatus chassis. The RSC shall assist in managing road conditions that may result in a vehicle rollover.

The RSC shall intervene to regulate the vehicle's deceleration functions by automatically reducing engine torque, engage the vehicle retarder and apply pressure to the brakes.

Electronic Stability Control (ESC) shall be included building upon the established RSC system by sensing the tendency of the vehicle to spin around and automatically applying the brakes to reduce that risk.

This system conforms to the requirements of NFPA-1901 4.13.1.2 - If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

Y___N___

REAR TIRES

The rear tires shall be Goodyear 12R22.5 (H) tubeless radial Armor Max MSA mud/snow tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

Y___N___

ALUMINUM WHEELS

Four (4) polished aluminum wheels shall be supplied and installed on the single rear axle. The wheels shall be highly polished on the outboard side.

Y___N___

WHEEL FINISH - BLACK

The aluminum wheels shall be Alcoa® Dura-Black™ with a menacing Matte Black finish.

Y___N___

HUB COVER TRIM SYSTEM- BLACK

Included is a One-Piece Hub Cover System with the same Matte Black Finish to complete the appearance.

Y___N___

TIRE PRESSURE MONITORING DEVICE

Each tire installed on the apparatus shall be equipped with a tire pressure monitoring device. The device shall consist of a valve stem cap with an LED tire alert to indicate tire pressure conditions. The LED will flash when the tire drops 8 psi below the factory setting.

Y___N___

LASER ALIGNMENT

The chassis shall have a laser alignment performed at the factory before delivery.

Toe In Front Axle - The toe in on a vehicle is set to reduce tire wear and to ensure that the vehicle shall steer in a straight line. Toe in measurements are set to a positive 2.50 millimeters total, giving the vehicle 1.25 millimeters from side to side.

Toe In Rear Axle - The toe in on the rear wheels is set up slightly different in that the axle and wheels are set to ride the "crown" of the road. This is achieved by adjusting the toe to a measurement of no less than 1 millimeter, but no more than 2.00 millimeters. The ideal measurement is 1.50 millimeters total for both sides.

Cramp Angle - Cramp angle is set to achieve the greatest turning radius possible with the selected components of the vehicle. Each front wheel is set to zero degrees. The wheel is then turned until it reaches the steering stops. This measurement is the cramp angle.

Y___N___

DIESEL 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)
MAX HP:	450 hp (336 kW) @ 2100 RPM
TORQUE:	1250 lb.-ft (1696 N-m) @ 1300 RPM
GOVERNED RPM:	2200

CURVE: FR96230EV

Standard Equipment on the engine to include the following:

OIL FILTER: A full flow / by-pass combination

LUBE OIL COOLER: High efficiency non-drainback full flow cooling

FUEL FILTERS: Two fuel filters providing 3 / 10 micron absolute filtration

STARTER: 12 volt

AIR COMPRESSOR: A Wabco 18.7 cfm compressor shall be provided

Y___N___

ENGINE COOLANT RADIATOR

The engine coolant radiator shall have sufficient capacity to perform under the engine manufacturer installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved IQA to the fire department for the apparatus.

This radiator shall have HRPOS top and bottom tanks. These tanks shall have a material thickness of 11 gauge. The top and bottom tanks shall be attached to the header assemblies with a minimum of forty (40) fasteners. These fasteners shall not exceed a center distance of 1.938 inches to reduce the possibility of tank leaks. These fasteners shall be torqued to a value of 29.5 ft-lbs.

The header plates shall be made of 16 gauge brass.

The radiator tubes shall be constructed of .0066 inch thick brass and have a dimensional size of .076 inch x .625 inch. These radiator tubes shall have welded tube seams.

The radiator shall contain three (3) rows of tubes arranged in an inline profile across the radiator core. The entire radiator shall a contain (231) tubes. These tubes shall have a smooth bore to allow for radiator cleaning.

In the critically stressed area, where the radiator tubes are attached to the header plates, this joint shall be accomplished with a welding process on the coolant side. In addition to the welded joint a solder fillet joint shall occur on the air side of the core creating a continuous dual bond.

The radiator shall have a louvered serpentine type core that contains fins constructed of .0024 inch thick copper. These fins shall be spaced to a maximum density of 14 fins per inch of radiator tube. Each fin shall have a louvered surface for high cooling efficiency.

The radiator shall contain an integral coolant de-aeration tank. This tank shall be designed to remove entrapped air or gas from the coolant side of the radiator.

The radiator side rails shall have integrally designed support gussets for the transition to the header attachment.

The bottom tank of the radiator shall have a drain valve for coolant removal.

The bottom tank of the radiator shall have a transmission cooler with a plate-type design. The plates shall have internal turbulators to break up laminar oil flow across the surface. The cooler shall have 1311 square inches of surface area for water surface contact and heat transfer.

The radiator system shall be pressurized with a cap rated per the cooling system requirements of the specific engine manufacturer.

The high efficiency engine fan shall be encompassed with a radiator shroud to provide the proper air flow from the fan blade to the radiator.

The perimeter of the radiator shall have recirculation baffles to eliminate the possibility of recirculation of "hot" air to the face of the radiator core. The bottom of the radiator shall have a recirculation baffle from the radiator to the frame rails.

Y___N___

COOLANT RECOVERY SYSTEM

A coolant recovery system shall be installed on the chassis. This tank is designed to capture coolant overflow when the engine coolant warms and expands. As the engine cools the overflow is then pulled out of the tank and back into the radiator, thus maintaining proper coolant levels.

Y___N___

CHARGE AIR COOLER RADIATOR

The engine charge-air cooler shall have sufficient capacity to perform under the engine manufacturers installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved IQA to the fire department for the apparatus.

This radiator shall have cast aluminum side tanks. These tanks shall have a material thickness of .200. These tanks shall be attached to the charge-air core with the ALBRAZE construction technique.

The external air fins shall be louvered serpentine and constructed of .006 inch thick aluminum.

The internal air fins shall be of the lance-and-offset design for greater air turbulence and higher efficiency. The internal fins are to be constructed of .010 inch thick aluminum.

The charge-air cooler shall be mounted directly in front of the engine coolant radiator. To reduce vibration rubber "iso" mounts shall be used for mounting of the charge-air cooler to the engine radiator.

The charge-air cooler shall contain thermal expansion slots to allow the expansion and contraction of the charge-air core over the wide range of temperatures that are expected in operation.

The charge air piping between the engine and charge-air cooler shall be aluminum tubing with a wall thickness of .065 inch. The system shall utilize four (4) ply silicone rubber woven Nomex hoses with stainless steel pressure bands. These bands are designed to maintain the hose shape under the pressure of the turbocharger boost air. All clamps used on the charge air piping are to be stainless steel constant torque and shall be installed at each joint.

Y___N___

LONG LIFE COOLANT

The coolant system shall contain a mixture to keep the coolant from freezing to a temperature of -34 degrees F.

The coolant supplied shall be Long Life Coolant compatible with the engine manufacturer's requirement.

Y___N___

COOLANT HOSES

The entire chassis cooling system shall have premium rubber hoses. All clamps to be stainless steel worm drive type clamps.

Y___N___

COOLANT SYSTEM CLAMPS

Single wire constant torque clamps shall be used for all cooling system hoses.

Y___N___

HEATER LINE SHUT OFF VALVES

The heater circuit shall have quarter turn shut off valves installed on both the supply and return lines to allow a complete shut off of coolant flow to the cab heaters in hot seasons of the year. These valves shall be installed in addition to the valves in the heater unit(s).

Y___N___

ENGINE AIR INTAKE FILTER

The engine shall be equipped with a Cummins Fleetguard heavy duty air filter. The filter shall be easily field serviceable.

Y___N___

ENGINE OIL

The engine shall have the initial factory fill made with a non-synthetic engine oil meeting the engine manufacturer's recommendations.

Y___N___

ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

The Driver shall have an on/off and a high/low engine brake control switch.

Activation of the engine brake shall occur at zero throttle position. The transmission ECU shall be programmed to operate in the pre-select downshift mode to maximize the retarding power of the engine brake.

The brake lights shall illuminate when the Jacobs Brake is in operation.

The Jacobs Brake shall be inoperative when the chassis is in pump mode.

The "JACOBS" engine brake shall be covered under the standard five (5) year Cummins engine warranty.

Y___N___

ENGINE FAST (HIGH) IDLE

The chassis shall be equipped with an Electronic Idle Control (EIC) for the electronic engine. Preset speed is factory adjustable.

The fast idle provision shall only function when the parking brake is set and the transmission is in neutral. Manual selection of the fast idle shall be controlled by a driver's momentary switch.

Automatic activation of the fast idle shall occur when a low voltage condition exists, the truck is in neutral and the parking brakes are applied.

Cancellation of the fast idle shall be achieved by resetting the manual switch or by depressing the service brake pedal.

Y___N___

AUXILIARY ENGINE COOLER

The cooling system shall have one (1) SENDURE auxiliary engine cooler mounted in the upper radiator water pipe. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump panel.

Y___N___

SPARK ARRESTOR

A spark arrestor shall be installed to the chassis air intake system. This arrestor shall be affixed to the inlet of the air cleaner housing mounted above the radiator to filter out airborne embers.

Y___N___

FAN DRIVE

A fully variable fan drive system shall be installed on the engine. Variable operation is required to reduce fan noise and improve response time and lower off-speed for maximum efficiency. Control of the fan operation is entirely from the engine and fan ECM with no manual override controls.

Y___N___

EXHAUST SYSTEM

A single exhaust pipe shall be provided for the engine. The exhaust pipe shall be supplied with a heat wrap. The wrap shall extend from the engine turbo charger to just below the frame rail.

The exhaust tubing from the turbocharger to the exhaust after treatment device shall be stainless steel.

Y___N___

CUMMINS AFTERTREATMENT SYSTEM

The chassis shall be equipped with a compliant Cummins exhaust after treatment system.

Y___N___

TAILPIPE

The tailpipe shall extend from the exhaust muffler/aftertreatment device to the rear of the vehicle making a 90° bend to exit the vehicle ahead of the rear tires on the curbside of the vehicle. The end of the pipe shall be cut square or perpendicular to the exhaust pipe centerline.

The pipe shall be unpolished stainless steel.

Y___N___

An exhaust gas diffuser shall be furnished on the end of the tailpipe.

Y___N___

DIESEL EXHAUST FLUID SYSTEM

The chassis shall be equipped with a five (5) gallon Diesel Exhaust Fluid (DEF) reservoir system.

The reservoir shall contain a Multifunctional Head Unit (MFHU) that contains integrated level and temperature sensors. The MFHU also shall contain a coolant powered heater to thaw DEF in conditions below 12°F (-11°C) to meet governmental regulations.

The reservoir shall be located on the left frame rail behind the front axle beneath the cab. The mounting system shall use stainless steel mounting brackets to reduce the possibility of corrosion.

Y___N___

TRANSMISSION

The transmission shall be an Allison 3000EVS automatic transmission with electronic controls.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

TRANSMISSION COOLER

An automatic transmission cooler shall be provided as an integral part located in the bottom tank of the radiator. It shall be designed to withstand 165 psi working pressure and an intermittent pressure of 250 psi. The cooler shall be of sufficient size to maintain the operating temperature within the recommended limits of the transmission manufacturer.

Y___N___

TRANSMISSION FLUID

The transmission shall be provided with heavy-duty transmission fluid meeting Allison specification TES-389.

Y___N___

FIVE SPEED PROGRAMMING

The transmission shall be programmed for five speeds.

First - 3.49
Second - 1.86
Third - 1.41
Fourth - 1.00
Fifth - 0.75
Reverse - 5.03

The transmission shall be able to shift from first through fifth gear without operator intervention. The chassis shall be geared for the top speed in 5th gear.

Y___N___

AUTOMATIC NEUTRAL

The transmission shall be provided with circuitry to provide automatic neutral. Setting the parking brake commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. Requires re-selecting drive range to shift out of neutral.

After the transmission has been activated with the automatic neutral feature the shift lever must be returned to neutral and back to drive for midship pump operations.

Y___N___

REMOTE FLUID LEVEL SENSING

The chassis shall be equipped with an electronic low fluid level indicator system for the engine oil, transmission oil, engine coolant and power steering fluid as part of the instrumentation package. This system eliminates the need for daily checking of fluid levels with manual dipsticks.

Coolant over temperature sensors are only capable of sensing excessive coolant temperature caused by clogged radiators, malfunctioning thermostats, failed water pumps or any other "circulation" problem. Upon loss of coolant, however, these temperature sensors must try to respond to hot air which, being a poor thermal conductor, results in signals that arrive only after the engine is severely damaged.

In a like manner, under leaking oil conditions low oil pressure signals are not obtained until the oil pump is starved for oil. Since the oil pump draws liquid from the very bottom of the crankcase pan, these signals arrive only after virtually all oil has been lost. Again, the damage has already occurred.

The liquid level sensor provides an early warning that fluid is being lost and allows corrective action to be taken before damage can occur. By using a sensor to turn on an indicator light, the low fluid level condition is communicated immediately to the operator.

ENGINE COOLANT

The coolant level sensor is located in the upper radiator reservoir. The corresponding LED indicator light is included in the display module.

ENGINE OIL

The engine oil sensor is in the engine oil sump. It monitors the oil level at approximately the 50% level. The corresponding LED indicator light is located to the right of the instrument panel at the engine enclosure console in clear view of the driver.

POWER STEERING FLUID

The power steering fluid sensor is located in the power steering fluid reservoir at the same level as the "Add" indicator on the dip stick. The corresponding LED indicator light is located to the right of the instrument panel at the engine enclosure console in clear view of the driver.

FUNCTION

The LED indicator lights will illuminate when the ignition is placed in the ON position as a test to insure that the warning circuits are working. They will go out when the starter button is pressed if normal fluid levels are detected. One or more of the lights staying on indicates a low fluid level in the corresponding system(s). Any time the engine is ON and a low fluid level is detected, the appropriate light will illuminate. The sensor output will reset when the ignition is turned off.

TRANSMISSION OIL

The transmission oil sensor is in the transmission oil sump. The fluid level indicator is integrated into the shift selector. Accessing the fluid level status is dependent upon the style of shift selector provided.

The transmission fluid level status is accessed through the “mode” function of the shift selector controls. First, park the vehicle on a level surface, shift to N (Neutral), and apply the parking brake. If equipped with a pushbutton shift selector, simultaneously press the Up and Down arrow buttons. If equipped with a lever shift selector, press the display mode button one time. A code will be displayed on the shift controls indicating that the oil level is HI, LO or OK. If the level is HI or LO, the display will also indicate the number of quarts of oil necessary to be added or removed to bring the oil level into the OK range. It may also display an error code that explains why fluid level information is not available. The fluid level check may be delayed until the following conditions are met:

- The fluid temperature is above 60°C (140°F) and below 104°C (220°F).
- The transmission is in N (Neutral).
- The engine is at idle.
- The transmission output shaft is stopped.
- The vehicle has been stationary for approximately two minutes to allow the fluid to settle.

See the Care and Maintenance section of the transmission Owner’s Manual for a more detailed description of the fluid check procedure along with a complete list of error codes.

Y___N___

DRIVELINES

Universal joints and driveshafts shall be SPICER 1760 series or equal. The driveshaft tube shall be a minimum of 4.09" diameter with a .180" tube wall thickness. The driveshaft slip joints shall be coated to reduce sliding friction and thrust under high torque loads. Permanent driveline installations shall be balanced to prevent vibration.

Y___N___

FUEL TANK

The fuel tank shall have a capacity of 50 gallons (US) and be D.O.T. certified. It shall be mounted with stainless steel straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling.

The tank shall have a 2.00 inch NPT fill to the driver's side of the chassis.

The fuel tank sending unit is to be mounted to the driver's side of the fuel tank for easy replacement without removing body panels.

Y___N___

FUEL LINES

Polyamide fiber, nylon braided, reinforced tubing with push-on reusable fittings shall be provided for the chassis fuel lines.

Y___N___

FUEL/WATER SEPARATOR

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve. This filter shall be able to remove up to 95% of dissolved water and up to 99% of free standing water.

Y___N___

ALTERNATOR

A 415 Amp NIEHOFF alternator shall be installed on the engine. The alternator shall be regulated by a remote mounted regulator.

Y___N___

FIRETRUCK CAB

The apparatus shall be designed to operate in emergency conditions. These conditions require the apparatus to maneuver into confined areas, and operate at prolonged periods of time, under extreme circumstances. To facilitate in these operations a cab-over-engine design is required in order to reduce the overall length, and turning radius of the apparatus thus increasing the maneuverability.

The cab design must be such to provide safe and efficient transport of emergency personnel. The cabin shall be designed with four (4) side doors of the largest size possible and with a grab handle and step arrangement to provide ease of entry and egress.

There shall be up to ten (10) positions available for occupant transport pending cab configuration. The number of seats and seating locations are described in detail later in this document.

The apparatus cab shall be of the latest in automotive design, styling and appearance.

CAB MATERIALS AND CONSTRUCTION

The extruded aluminum cab shall have the following material gauges as a minimum:

- Cab floor - 3/16 inch (.190 inch) aluminum
- Front skin - 3/16 inch (.190 inch) aluminum
- Cab side panels - 3/16 inch (.190 inch) aluminum
- Cab rear wall - 3/16 inch (.190 inch) aluminum
- Cab driver's floor - 3/16 inch (.190 inch) aluminum
- Cab officer's floor - 3/16 inch (.190 inch) aluminum
- Cab crew area floor - 3/16 inch (.190 inch) aluminum
- Cab roof - 3/16 inch (.190 inch) aluminum
- Cab doors - 3/16 inch (.190 inch) aluminum

Roof Rail Section: Extending from the front to the rear of the cab, above the doors, the cab shall have an extruded aluminum section. This section shall be designed to interlock with the roof sheet and incorporate the door drip molding in one single piece.

Upper Transverse Member: Amid ship in the cab there shall be a boxed beam header assembly located transverse in the cab from left to right.

Front Door B-Post: This vertical box section of the cab located behind each of the front doors provides the slam post for the door latch assembly. This section also is a main member in the cab skeletal system. The B-Post ties into the Upper Transverse Member to provide torsional stiffness in the open space design of the cab.

Rear Door D-Post: The box assembly design of the rear door D-post provides an anchor for the rear door latch assembly. This section is the main vertical support at the cab rear corner providing the anchor point for the rear wall structural lattice network.

Roof Panel Rails: The roof panel sub-assembly shall have extruded hat section supports bonded to the roof skin. These roof hat sections shall be joined to the Cab Roof Rail Section to complete the upper cab skeletal structure. These completed Roof Panel Rails shall provide a grid for maximum roof crush and deflection strength. The roof shall support a minimum weight of 250 lbs. / sq. ft. without permanent roof deformation.

Rear Wall Rails: The rear wall assembly shall have extruded hat section supports bonded to the wall skin. These sections shall be joined to the Roof Panel Rails and to the rear door slam post and floor provide a rear wall grid structure with maximum strength.

Cab Front Wall: The front wall of the cab shall be designed with a double wall construction to reduce the effects of exterior noise in the crew and operator compartment.

CAB DIMENSIONS

The cab shall have the following dimensional requirements:

- Overall Width - 100.00 inches
- Roof - 12.00 inches Raised
- Center of front axle to back of cab - 68.00 inches
- Center of front axle to front of cab - 74.00 inches
- Windshield area - 4,200 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum

The cab interior shall have the following dimensional requirements:

- Drivers side floor width - 22.50 inches minimum
- Floor to the ceiling in the driver and officers area of the cab - 59.50 inches minimum
- Floor to the top of the engine enclosure - 28.00 inches maximum
- Officers side floor width - 24.50 inches minimum
- The measurement across the floor from the rear wall to the first vertical portion of the engine enclosure - 51.25 inches and the floor width from step well to step well shall be no less than 84.00 inches
- Floor to the ceiling in the rear of the cab - 65.50 inches minimum

CAB DOORS

The cab entry and egress shall be designed for a firefighter in full turnout gear. Each door shall open a minimum of ninety degrees to afford the firefighter maximum space.

The doors shall be of a flush design each having exposed, one-piece, polished stainless steel hinges. The hinge shall be made of 12-gauge material with a minimum hinge pin diameter of 1/4 inch.

The door windows shall have interior and exterior glass weather seals to prevent the influx of exterior air.

The doors shall have exterior and interior paddle type latches for ease of opening with a gloved hand. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

FRONT DOORS-FULL LENGTH

The cab front doors shall be of the full-length design enclosing the entire step area of the cab. The doors shall be a minimum of 38.75 inches wide by 75.00 inches high. Each door shall have a roll down window with a minimum glass viewing area of 773 square inches per door. There shall be a fixed piece of forward glass in each of the front doors.

REAR CAB DOORS-FULL LENGTH

The rear cab doors shall be similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 34.00 inches wide by 88.00 inches high. Each door shall have a roll down window with a minimum glass viewing area of 670 square inches per door.

INTERIOR DOOR LOCKS

All doors shall have door locks with interior controls and exterior keyed door locks. The installation shall be in conformance with FMVSS 206, with specific adherence to 49 CFR 571.206 Section 4.1.3 requiring that "Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle". All doors shall be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when closed.

CAB GLASS

AS-1 safety laminate glass shall be used in a two piece, wrap around design with a minimum of 3760 square inches of windshield area for maximum visibility. The windshield shall have the style of a one-piece assembly with the practical installation of two pieces for lower replacement cost. The windshield shall be readily available from a nationally recognized automotive glass manufacturer that maintains local distribution outlets.

All glass shall be tinted.

All fixed glass shall be installed with a one-piece triple locked rubber lacing material. Due to long term appearance two-piece chrome trim lock lacing is not desired.

SUNVISORS

The driver and officer side of the cab shall be equipped with a sun visor. The vinyl covered visors shall be a minimum of 19.00 inches by 7.00 inches.

DRIVER SIDE ELECTRICAL CABINET

An electrical cabinet designed to house the main battery electrical disconnect and facilitate the installation of an onboard battery charger or battery conditioner, shall be provided under the

driver's seat. A bolt on limited access; aluminum spatter painted hatch, shall be installed on the front side of the seat riser. The access hatch shall have a louvered section to provide air circulation to the cabinet.

WINDSHIELD WIPERS

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24.00 inch blades and have 28.50 inch wet arm electric pump washers. A 70 ounce minimum windshield washer reservoir shall be furnished.

FASTENERS

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

BATTERY ACCESS

The rear cab steps shall have a removable kick panel, providing access to the batteries for routine maintenance and inspection.

CAB CORROSION TREATMENT

The cab shall have a corrosion preventative material conforming to Mil Spec C-16173-C, Grade 1, applied during and after construction. A 10-year warranty against perforation due to rust or corrosion shall be furnished for the cab.

Y___N___

TRANSMISSION SELECTOR

The transmission shall be controlled by a push button type shift control. It shall be internally illuminated for night operation.

Y___N___

TRANSMISSION OIL LEVEL SENSOR

The transmission shall be equipped with the oil level sensor (OLS). This sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

Y___N___

EXTERIOR DOOR HANDLES - BRIGHT FINISH

The cab exterior door handles shall have a bright anodized finish.

Y___N___

CAB STEPS

There shall cab entry steps with an upper and lower step at each entry door position.

INTERIOR CAB STEP TRIM

The cab steps shall be enclosed behind each entry door. The lower step shall be sealed from the underside of the cab to reduce road splash from entering the step area while the vehicle is in motion. The horizontal upper step surfaces shall be integral to the cab and shall be covered with

bright aluminum tread plate. The lower cab steps shall be constructed from stainless steel Laser Grip material, meeting the requirements of NFPA-1901.

The vertical toe kick surface area of the upper cab step wells shall be covered with aluminum tread plate.

Y___N___

CAB ENTRY STEPS - BRIGHT FINISH

The cab entry steps shall have a bright finish.

Y___N___

LOWER STEP LIGHT

There shall be an amber LED light provided and installed in the outboard facing bottom flange of each cab step.

Y___N___

LOWERED CHASSIS CAB STEPS

There shall be bolt on auxiliary steps for all four (4) cab entry doors that shall be lowered to provide a manageable ground to first step distance. These steps shall be open style for ease of access and constructed with a non-skid stepping surface.

Y___N___

AUXILIARY CAB STEPS - BRIGHT FINISH

The auxiliary cab steps shall have a bright finish.

Y___N___

DEF FILL ACCESS

The left rear crew step area shall have hinged access to fill the DEF tank without raising the cab.

Y___N___

HEATER / DEFROSTER

A 57,600 BTU heater with a three (3) speed fan shall be mounted in the front of the cab, centered over the windshield. This heater shall have six (6) adjustable vents to assure windshield defogging.

Y___N___

DEFROSTER FANS

Two (2) 6.00 inch windshield defroster fans shall be mounted on the overhead console, one (1) each side of the center of the cab.

Y___N___

45,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 45,000 BTU air conditioning evaporator and 33,400 BTU heater centrally located on the forward slope of the raised roof.

The system is to have a 13.1 cu. in. minimum compressor mounted on the engine to provide the compressed refrigerant to the system. The compressor is to be plumbed to a heavy duty truck, triple fan air conditioning condenser mounted on the cab roof. The condensing unit shall have an aerodynamic shroud that is painted to match the color of the cab roof. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from

contaminates, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The evaporator shall have an externally equalized expansion valve and be thermostatically protected to prevent freeze up. Dual high performance 3-speed blowers shall provide a minimum of 650 CFM air flow. Each blower is to be controlled separately. Eight (8) downward facing adjustable diffusers with shutoff capability shall be utilized to direct the air flow through the cab.

The air conditioning controls, on/off switch, thermostat control, and blower switches shall be located on the climate control display module within reach of the driver.

The climate control system shall utilize both automatic and manual control methods.

The climate control display's system standby screen shall maintain all of the climate control functions OFF.

The climate control display's automatic operation screen shall allow the user to select a desired temperature and the climate control system shall automatically choose the temperature mode (cool or heat) and the fan speed (low, medium or high) to maintain the desired temperature.

The climate control display's manual operation screen shall allow the user to set the temperature mode (cool or heat) and the fan speed (low, medium or high) as desired.

Y___N___

CAB INSULATION

Foam rubber type insulation shall be installed in the rear wall and the cab ceiling to provide a better sound and heat barrier. The insulation shall be a minimum of 1" thick. The material shall be compliant with FMVSS-302.

Y___N___

EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference, the purchaser shall be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

Y___N___

BATTERY BOX TRAY - STAINLESS STEEL

The battery box trays shall be stainless steel to reduce the corrosive potential of the tray. The battery hold down and brackets and hardware shall also be made of stainless steel.

Y___N___

DRI-DEK MATTING - BATTERY BOX

There shall be black Dri-Dek matting installed beneath the truck batteries.

Y___N___

BATTERY BANK

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 the1 battery bank is activated.

BATTERY CABLES

All battery wiring shall be "GXL" battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

STARTING CIRCUIT

One (1) engine start button is to be located on the lower right dash panel. It shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly above the start button to indicate that the battery bank is on.

Y___N___

BATTERY POWER BUS BARS

There shall be solid copper bus bars utilized for the direct connections between batteries. These bus bars shall be nickel plated for corrosion resistance and provided with color coded heavy shrink tube between the batteries for short circuit protection.

Y___N___

BATTERY CHARGER

A Kussmaul Chief Series Auto Charge 4012, 40 Amp, Triple Battery Bank Charger with onboard display shall be installed for charging the batteries. Automatic sensing of the battery condition shall stop charging when the batteries are fully charged.

The charger shall be installed behind the driver's seat in the cab.

The charger shall include the following features:

Dual Battery Type Technology – allows for two (2) dissimilar battery chemistry charging at the same time. Accommodates Flooded, Gelled Electrolyte, AGM, Odyssey®, Lithium Iron Phosphate (LFP), and customized.
Parasitic Load Compensation (PLC) – allows for user input of total accessory load amps on the

vehicle. This allows the charger to shift the absorption stage set point, so the battery voltage drops to the float voltage when the desired current is reached.

Configurable for 3-step or float charging.

Y___N___

ON-BOARD ELECTRIC COMPRESSOR

A KUSSMAUL AUTO AIR model 091-9-12V on-board air compressor shall be supplied. The 12 Volt Auto Pump air compressor designed to maintain the air pressure in the air brake system while the vehicle is not in use. A pressure switch senses when the system pressure drops and starts the compressor which then runs until pressure is restored. All ball bearing construction, lubricated for life, assures reliable operation and requires no servicing. Compressor Output: 0.35 CFM@60 PSI Pressure Switch: Adjustable Set Point-Factory set to 75 PSI Cut-in, 95 PSI Cut-out.

The compressor shall be located in the officer's side step well with a bolt on style access panel, the air compressor shall be permanently wired to the chassis 12 volt electrical system.

Y___N___

KUSSMAUL AUTO DRAIN AC

A KUSSMAUL, AUTO DRAIN 091-9-131 moisture trap shall be installed in the output pressure line of the auto pump. The Auto Drain shall drain the moisture from the trap each time the compressor shuts down. A normally open solenoid valve drains the moisture from the trap each time the compressor shuts down. Easily installed on any 12VDC compressor, the Auto Drain assures that the filter bowl is always drained and does this without intervention by maintenance personnel.

Y___N___

REMOTE CONTROL PANEL

A KUSSMAUL 091-266-RCP remote control panel shall be provided.

Y___N___

REMOTE CHARGE INDICATOR LOCATION

The remote charge indicator shall be located on the driver's seat box adjacent to the master battery switch.

Y___N___

SHORELINE AUTO-EJECT

A KUSSMAUL Super Auto Eject, model 091-55-20-120-XX, with weatherproof cover shall be provided.

The Super Auto Eject is to be completely sealed when the cover is closed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-Volt AC circuit after the mating connector is inserted and before the shoreline outlet connector is ejected. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-Volt AC - 20 Amp type using a NEMA 5-20P connector.

Y___N___

ELECTRICAL INLET COVER

The Auto-Eject cover shall be a Kussmaul 091-55-XX model.

Y___N___

ELECTRICAL INLET COVER COLOR

The Auto-Eject cover shall be red in color.

Y___N___

ELECTRICAL INLET LOCATION

The Auto Eject assembly shall be mounted on the exterior of the cab behind the driver's door.

Y___N___

BATTERY JUMPER STUDS

Battery jumper studs shall be provided on the chassis. The jumper studs shall be mounted underneath the cab, on the rear of the driver's side battery box. The studs shall be connected to the chassis batteries with 1/0 color coded cables, red for the positive cable and black for the negative cable. The studs shall be protected with color coded plastic covers when not being used.

Y___N___

ENGINE ENCLOSURE

To reduce the noise in the cab the engine enclosure 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 enclosure 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 on 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 dBa level within the limits stated in the current edition of NFPA 1901.

Y___N___

CAB DOORS - INTERIOR TRIM

To provided durability the interior of the cab doors shall be finished with full length aluminum panel that is finished with spatter paint.

Y___N___

INTERIOR CEILING PADDING AND TRIM

The cab front interior ceiling shall have a one-piece, removable, vinyl headliner to cover all wiring and tubing used for lights and antenna leads.

Y___N___

REAR WALL COVERING

The rear interior wall of the cab shall have a two-piece, removable, wall covering to finish the interior trim, cover all wiring and tubing used for lights and antenna leads.

Y___N___

FLOOR COVERING

The front and rear floor areas of the cab shall be covered with "HUSHCLOTH" sound barrier floormats. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

Y___N___

REAR FACING SEAT BOX COVERING

The rear facing seat box area of the cab shall be covered with "HUSHCLOTH" sound barrier floormat. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

The seat box covering shall blend with the cab interior paint color.

Y___N___

REFLECTIVE MATERIAL - INTERIOR CAB DOORS

The cab front and crew doors shall have a SecuriTrim chevron installed inside each door. The reflective material shall be red/yellow diamond grade 3M 983.

Y___N___

STEERING WHEEL AND COLUMN

The steering wheel shall be an 18.00 inch diameter, leather wrapped 4-spoke wheel.

The center area of the steering wheel will house the driver’s air bag, DOT horn, and / or air horn-siren controls as described elsewhere in these specifications.

The steering column shall be a Douglas tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self-canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column.

The turn signal arm will also contain the windshield wiper controls, providing on/off, intermittent, and timed control of the wipers. The wipers will have an auto park feature.

The steering column shall also house the driver’s knee air bags if specified.

A lever on the left side of the steering column shall control the tilt / telescope feature.

There shall be a rubber boot installed to cover the steering shaft from the dash to the floor.

Y___N___

GRAB HANDLES

One (1) molded grab handle shall be installed on the driver's side on the A Post.

One (1) additional molded grab handle shall be installed inside the cab. The handle shall be located on the officer's side on the A Post.

Two (2) additional molded grab handles shall be installed in the cab. These handles shall be located one each side on the B Posts side of the crew area doors.

Y___N___

RADIO COMPARTMENT WITH DOOR

Beneath the officer's seat there shall be a radio compartment with interior dimensions of 19.50 inches wide x 17.00 inches long x 7.00 inches high.

This compartment shall have a diamond plate door mounted on a piano hinge.

Y___N___

COMPARTMENT OPEN LIGHT

A Red Open Compartment Flashing Light, Whelen OS Series LED shall be mounted on the driver's side face of the overhead panel. A chrome flange is to be supplied with the light.

This light is wired with a flasher to the power panel for completion to circuit on the body.

The light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DOOR OPEN**'.

Y___N___

DECKGUN RAISED LIGHT

A Red Flashing Light, 'Whelen OS Series LED shall be mounted on the driver's side face of the overhead panel. A chrome flange is to be supplied with the light.

This light is wired with a flasher to the power panel for completion to circuit on the body.

The light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DECKGUN RAISED**'.

Y___N___

CAB DOME LIGHTS

There shall be eight (8) Whelen Model CREGCS 6.00 inch round dome lights provided and installed in the cab ceiling.

The lights shall have dual red and white, fade to off, LED elements.

One (1) each, inboard, near the driver and officer and the six (6) remaining lights shall be mounted above in the crew cab ceiling in two (2) rows above the riding positions, evenly spaced side to side across the ceiling.

The lights will be controlled in the following manner:

- Individually, red or white light, at the light.
- All lights, red or white, via a switch in the driver's overhead console
- All lights, red or white, based on switch position, by opening any cab door.

Y___N___

CAB DOME LIGHTING ACTIVATION

The cab dome lights shall be controlled in the following manner:

- Individually, red or white light, via a switch on the light.
- All lights, red or white, via a switch in the driver's overhead console
- All lights, red or white, based on switch position, by opening any cab door.

Y___N___

CAB FLOOR LED STEP LIGHTING

The floor of the cab shall be trimmed with a ribbed aluminum extrusion. The extrusion shall protrude approximately .75 inches over the floor area to provide a mounting channel and guard for an LED integrated light.

The LED lighting shall illuminate the step area of the cab and all step lights shall be illuminated when any door is opened and the battery selector switch is in the on position.

The lighting shall be operable in either white or red depending upon control circuitry.

Y___N___

LIGHT - ACTIVATION

The lighting shall be activated by opening a cab door.

Y___N___

DRIVER'S OVERHEAD SWITCH PANEL

There shall be a switch panel provided and installed above the driver's seating position. The panel shall be ergonomic molded with rocker type switches with dimmable backlighting. The switches shall be clearly labeled.

The following switch controls shall be provided (left to right):

Top Bank:

Switch 1: Engine Regeneration Inhibit
Switch 2: Engine High Idle
Switch 3: Interior Cab White Lighting
Switch 4: Ground Lights

Bottom Bank:

Switch 1: Engine Regeneration Start
Switch 2: Mirror Heat
Switch 3: Interior Cab Red Lighting
Switch 4: Mud & Snow ATC Disable

Y___N___

DRIVER'S & OFFICER'S RUGGED DASH CONSOLE

The housings for the driver's instrumentation and the officer's side dash housing shall be rugged metal fabrications.

The fabrications shall be provided with a black textured, powder-coated finish.

The apparatus is expected to operate in adverse conditions and have a long life cycle.

Y___N___

OFFICER'S SIDE GLOVE BOX

There shall be two (2) glove box storage slots provided at the officer's side of the dash. The openings face the officer and shall measure approximately 4.50 inches high x 14.00 inches wide by 11.00 inches deep with a 15 degree angle to restrain stored items.

Y___N___

INSTRUMENTATION AND CONTROLS

An ergonomically designed instrument panel shall be provided. The instrument panel shall have a black textured anti-glare surface finish. The instrument panel shall be secured with mechanical fasteners to provide easy access for servicing.

A self diagnostic message center shall be included above the steering column in the instrument panel and the provided gauges shall have red LED backlighting for enhanced visibility.

When the 'on' initial ignition sequence is initiated a lamp check function shall illuminate and sequence the drivetrain warning light indicators. The self diagnostic message center shall display a warning if data link communications are lost.

The instrument panel shall include the following gauges and indicators.

- Electronic speedometer with LCD odometer
- Electronic tachometer
- Engine Coolant Temperature gauge with warning light and buzzer
- Engine Oil Pressure gauge with warning light and buzzer
- Transmission Fluid Temperature gauge, with warning light and buzzer
- Two (2) air pressure gauges, each with warning light and buzzer
- Voltmeter with low voltage warning light and buzzer
- Fuel Level gauge
- DEF Level gauge
- High Beam indicator light
- Parking Brake set light
- Turn Signal indicator lights
- Low Level Power Steering Fluid indicator light
- Low Level Windshield Washer Fluid indicator light

The headlamp and dash lighting control panel is to be located to the left side of the steering column in the outboard positions. This panel shall have a black textured anti-glare surface.

The lighting control panel shall include the following:

- Headlight Control switch with three (3) functions: off, parking lights on, and low beams on.

- Dash mounted dimmer switch for instrumentation lighting control

The engine control panel is to be located beneath the instrument panel, to the left side of the steering column. The panel shall have a black textured anti-glare surface.

The engine control panel shall include the following:

- Keyless ignition switch with a green pilot light
- Engine start button

The apparatus control panel is located beneath the instrument panel, on the right side of the steering column. The panel shall have a black textured anti-glare surface. The apparatus control panel is designed for the location of pump shift controls, if applicable.

Y___N___

AUDIBLE TURN SIGNAL REMINDER

There shall be an audible alarm that shall sound when the turn signal remains flashing for a distance greater than one mile. The reminder shall not sound when the hazard lights are operating.

Y___N___

AUDIBLE LIGHTS ON REMINDER

There shall be an audible alarm that shall sound when the headlight switch is left in the on position and the ignition is off. The alarm shall self cancel after 2 minutes of operation.

Y___N___

AUDIBLE PARKING BRAKE REMINDER

There shall be an audible alarm that shall sound when the parking brakes are NOT set and the ignition is turned off. This alarm shall self cancel after 2 minutes.

The Parking Brake reminder shall sound an audible alarm when the parking brakes are set and an indicated speed of over two miles per hour occurs.

Y___N___

DUAL TRIP ODMETERS

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independent operation and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

Y___N___

SPEEDOMETER ACTIVATED IN PUMP MODE

The speedometer and odometer shall be activated while in pumping mode.

Y___N___

LOW FUEL LIGHT

A "Low Fuel" warning light and alarm shall be installed in the dash message center. This light shall illuminate when the apparatus fuel level reaches 25% of the fuel remaining.

Y___N___

TRANSMISSION OVERHEAT WARNING LIGHT

A transmission oil temperature light with alarm shall be provided on the dash message center.

Y___N___

LOW VOLTAGE WARNING

A low voltage indicator light shall be installed on the dash message center. An alarm and the dash indicator light shall activate when the system voltage drops below 11.8 volts.

Y___N___

AIR CLEANER RESTRICTION INDICATOR

An air cleaner restriction indicator shall be installed in the driver's message center. The indicator shall provide visual warning when a high air restriction condition exists for a minimum of 4 seconds.

Y___N___

LOW COOLANT WARNING

Low coolant warning shall be accomplished through the engine electronics to provide driver warning via the engine stop warning light.

Y___N___

FORWARD ENGINE ENCLOSURE CONTROL CONSOLE

There shall be a rugged metal fabricated control console with a black textured, powder-coated finish provided and installed on top of the engine enclosure. The console shall be designed in such a manner as not to adversely obstruct the drivers view.

The console shall be provided with a removable access cover for servicing and designed with three (3) distinct surfaces (driver, officer, and center) to provide maximum visibility and access to equipment and controls mounted at the engine enclosure.

There shall be a sixteen (16) place switch panel provided and installed that is accessible to the driver position. The panel shall have ergonomic molded, rocker type switches with dimmable backlighting. The switches will be clearly labeled.

The panel shall include a master warning light control switch to allow for pre-selection of response mode functions. The switch shall be red in color.

The remaining switches shall be programmed and labeled as required for components specified in the specifications.

There shall be dedicated mounting areas at the engine enclosure console provided for the following equipment, if applicable:

- Electronic Siren mounting location
- 2-way Radio mounting location
- Traffic Director lighting control mounting location
- Intercom controls mounting location

Y___N___

PARKING BRAKE CONTROL VALVE

The parking brake control valve shall be located in the driver's dash engine control panel.

Y___N___

STORAGE TRAY AND CUP HOLDERS

There shall be a storage assembly with cupholders provided on top of the engine enclosure.

The storage area shall include two (2) open recessed storage trays with approximate dimensions of 4.00 inches wide by 8.00 inches long.

To the rear of the storage trays there shall be two (2) recessed single cup holders, one (1) within reach of the driver and one (1) within reach of the officer. The cupholders shall be sized to fit a 32 oz Nalgene bottle or similar.

The storage assembly shall be constructed from metal and have a black powder coated finish.

Y___N___

USB/USB-C CHARGING PORT

There shall be two (2) 4.2 amp USB-A and USB-C charging ports provided and installed in the cab. One (1) shall be installed in the driver's area of the cab and one (1) shall be installed in the officer's area of the cab.

Y___N___

The power point shall be wired to switched battery power with the appropriate wire size and fuse.

Y___N___

MULTIPLEXED ELECTRICAL SYSTEM

The apparatus shall be equipped with a Class-One/Weldon Multiplex system. This system shall consist of a SuperNode (main control unit) that communicates by Controller Area Network(CAN) to various input/output(I/O), and Power Distribution modules(PDM).

The multiplex system shall provide advanced diagnostic capabilities to assist in troubleshooting the electrical system of the apparatus. Troubleshooting can be done using info display and/or a computer connected to the main control unit.

CAN is a J-1939 data bus that provides a wired data bus for the SuperNode to communicate with various modules, engine, and transmission.

The multiplex system consists of one or more of the following components:

- SuperNode—This is the main control unit where the program resides, and all logic, load management, reporting and diagnostics is performed. The SuperNode has a built in Vehicle Data Recorder (VDR). This unit has connections for CAN, inputs, high current outputs, high current power, computer access for VDR, programming and diagnostics.
- PDM—This I/O module has inputs and outputs that can drive high current capable outputs. It provides information such as Input status and output current status. All output current is monitored and controlled by the SuperNode.
- I/O Modules—These modules can be a combination of I/O or independent inputs or outputs. The current output is typically less that the SuperNode or PDM.
- VDR—In addition to the VDR built into the SuperNode, a seat input monitor shall be used along with information from the power train via J1939 shall be collected and stored in the SuperNode. This information can be downloaded to a computer via USB cable.
- Display—This will provide status of seats and belts, various alarms, access to specific settings and a visual view of I/O.

CHASSIS COLOR CODED WIRING

All wiring shall be color coded and continuously marked with the circuit number and function shall fully meet NFPA and SAE requirements. Various wire colors will be used to identify circuits along with the circuit number permanently marked on the wire at no more than 6” intervals.

All wiring shall be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of NFPA-1901.

A battery "loop back" ground circuit shall be supplied to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

ELECTRICAL SYSTEM CONNECTORS

Where needed or required, all connectors shall be of the automotive type and suitable for the purpose and environment. These connectors shall become mechanically locked and sealed when mated.

All single wire terminations requiring special connectors such as a ring terminal shall be crimped and covered with adhesive heat shrink tubing. Fork terminals are shall not be allowed. **NO EXCEPTIONS.**

Y___N___

INFORMATION DISPLAY MODULE

There shall be a 5.00 inch display screen provided and installed in the overhead headliner, in clear view of the driver.

The screen shall be a rugged design for extreme environments that is bright with a backlit display providing high contrast text and full color graphics for excellent sunlight readability.

The following shall be displayed:

- Seat Belt Warning System graphics
- Cab and Compartment Door Open graphics
- Accessory Components, (if specified), in Raised/Extended Position Warnings
- Other applicable text warnings
- System Diagnostics and trouble-shooting

Y___N___

CAPTIUM META-DATA TELEMATICS SYSTEM

The apparatus shall be equipped with Akron-Weldon Captium data collection software.

- Apparatus shall be equipped with a cellular-based telematics system with integrated cellular modem and GPS, optionally interoperable with an onboard mobile modem/router in lieu of the integrated cellular modem.

- The telematics system shall be capable of capturing and reporting real-time telematics information, captured from, but not limited to, the vehicle's SAE J1939 CAN network, multiplexed electronic control system's network, and firefighting systems such as pump governor and other components.
- The telematics system's manufacturer shall have interoperative agreements in place with third-party telematic information services including Cummins Connected Diagnostics™ and HAAS Alert.
- The user experience for the telematics system shall be cloud-based, accessible through any internet-connected device.
- The telematics system shall include five (5) years of cloud access to the user experience website. After five (5) years it will be the responsibility of the end user to renew the subscription to continue the data service.

Y___N___

FIRE COM INTERCOM SYSTEM

There shall be a Fire Com intercom system installed in the chassis cab. The intercom system shall be installed and have all wiring and components to render the system operational as follows:

One (1) 5200D series intercom system features:
Voice-activated circuitry (VOX)
Continuous mobile radio monitoring
Independent controls allow quick adjustment of volume and squelch
Durable steel housing protects against heat, moisture, and damage from impact
Other installed components include:

Y___N___

DRIVER'S POSITION

The following headset shall be installed adjacent to the driver's seating position in the cab.

Y___N___

One (1) Fire Com UHW-505 headset(s) shall be provided. Each headset shall have an auto leveling microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort.

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

The headset shall be provided with a charger and base station (with PTT operation).

Appropriate for driver or officer positions.

Y___N___

OFFICER'S POSITION

The following headset shall be installed adjacent to the officer's seating position in the cab.

Y___N___

One (1) Fire Com UHW-505 headset(s) shall be provided. Each headset shall have an auto leveling microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort.

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

The headset shall be provided with a charger and base station (with PTT operation).

Appropriate for driver or officer positions.

Y___N___

CREW POSITIONS

The headset(s) shall be installed adjacent to the crew seating positions in the cab.

Y___N___

A wireless base multiple channel base station (supports multiple non-radio transmit wireless headsets).

Y___N___

Two (2) Fire Com UHW-503 headset(s) shall be provided. Each headset shall have an auto leveling microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort.

Secure Black PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will NOT activate the radio as a transmit.

Appropriate for crew positions.

Y___N___

RADIO INTERFACE

A radio interface cable will be provided for the following radio:

Y___N___

The intercom control shall be mounted on top of the engine enclosure within reach of the driver and officer.

Y___N___

BACKUP CAMERA

There shall be an ASA Audiovox video system provided on the apparatus.

Y___N___

BACK-UP CAMERA MONITOR

The color monitor shall be manufactured by ASA.

The 7.00 inch color LCD monitor contains a water proof housing, circuit protection, backlit controls, integrated audio speaker, NTSC and PAL video signal compatible, 3-camera inputs, manual (pushbutton) or automatic (trigger) source selection, auto power on (standby) day / night brightness modes, on screen display (OSD) for AV source, picture adjustment and volume level, non-volatile memory for picture and volume adjustment settings, anti-glare / anti-scratch protective lens, detachable sunshield.

Y___N___

MONITOR LOCATION

The monitor for the back-up camera shall be mounted in an overhead position visible to the driver.

Y___N___

REAR CAMERA - COLOR - HIGH PERFORMANCE

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

Y___N___

The back up camera system shall be powered with the battery power switch in the cab. Operation of the camera will be by the driver with the monitor controls.

Y___N___

CAMERA LOCATION

The back-up camera shall be mounted at the rear of the apparatus beneath the hose bed.

Y___N___

CAMERA GUARD

A polished aluminum Cast Products trim guard shall be affixed to the wall behind the camera with a flange over the top of the camera housing to aid in protecting the camera. The flange over the camera shall be wider than the camera width and extend behind the rear of the camera face.

Y___N___

12Vdc POWER POINT

There shall be two (2) 12 Volt, socket (cigarette lighter) type, receptacles with protective hinged covers provided and installed in the cab. One (1) shall be installed in the driver's area of the cab and one (1) shall be installed in the officer's area of the cab.

Y___N___

The power point shall be wired to switched battery power with the appropriate wire size and fuse.

Y___N___

12Vdc POWER CIRCUIT

A circuit protected 30 amp battery "hot" circuit, a circuit protected 30 Amp battery switched circuit, and a ground circuit with the proper wire size to handle the current shall be provided.

These circuits are provided for two-way radio and/or accessory wiring.

Y___N___

CIRCUIT TERMINATION LOCATION

The radio / accessory power circuit shall terminate in the power panel area of the cab.

Y___N___

12Vdc POWER CIRCUIT

A circuit protected 30 amp battery "hot" circuit, a circuit protected 30 Amp battery switched circuit, and a ground circuit with the proper wire size to handle the current shall be provided.

These circuits are provided for two-way radio and/or accessory wiring.

Y___N___

CIRCUIT TERMINATION LOCATION

The radio / accessory power circuit shall terminate inside the EMS cabinet.

Y___N___

RADIO ANTENNA MOUNT WIRING

One (1) NMO mount shall be roof mounted, on the officer's side of the cab.

The antenna mount shall be located 34.00 inches from the front face of the cab and 18.00 inches from the cab side.

The unterminated coax is to be routed in the cab to the radio power circuit termination or officer's seat box if no radio power circuit is requested.

Y___N___

The antenna wiring shall terminate behind the officer's seat or in the officer's seatbox when so equipped.

Y___N___

WEATHERPROOF CAP

One (1) NMO mount black weatherproof cap shall be provided.

Y___N___

120-VOLT AC WIRING

All 120-Volt AC wiring shall be wired to the shoreline connection, circuit protected with the proper wire size to handle the current shall be provided.

These circuits are provided for low amperage requirements of hand held chargers for radios and accessories.

Y___N___

CIRCUIT TERMINATION LOCATION

The 120-Volt AC power circuit shall terminate in the center of the cab on top of the engine enclosure.

Y___N___

ELECTRICAL OUTLET

The electrical outlet shall be a NEMA 5-15, rated at 120-volt AC, 15-Amp, duplex straight blade receptacle.

Y___N___

POWER SOURCE

The 120-Volt AC power circuit shall be wired from the cab shoreline connection.

Y___N___

PUBLIC BROADCAST RADIO

The cab shall be equipped with an AM/FM Stereo Radio and four (4) ceiling mount recessed speakers.

The radio shall be a Jensen JHD910BT model that shall include the following features:

- Waterproof
- uV and Corrosion Resistant
- Electronic US/Euro AM/FM Tuner
- 30 Programmable Presets (12 AM, 18 FM)
- Non-Volatile Memory for User Settings and Preset Memories
- 7-Channel NOAA Weather Band

- Weather Alert
- Bluetooth Ready
- Auxiliary Audio Input
- 2-Channel Amplified Audio Output
- Backlit Controls with Selectable Illumination Color
- Daylight Readable Display
- Clock with 30-day Backup Power
- Work Timer
- Audible Beep Confirmation Tone

ANTENNA

The antenna shall be a JAN139 6.00 inch Rubber mast top JENSEN Antenna to withstand mobile audio environments with its heavy duty design.

The antenna shall be mounted to the front of the cab on the officer's side roof.

Y___N___

RADIO LOCATION

The radio shall be mounted in the overhead headliner within reach of the driver.

Y___N___

ROAD SAFETY KIT

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

Y___N___

CAB CRASHWORTHINESS TEST

Dynamic tests shall be performed to evaluate the crashworthiness of the proposed vehicle cab configuration to the requirements of NFPA 1901-09 section 14.3.2.

Cab roof strength shall be tested utilizing the dynamic preload criteria from SAE J24221 paragraph 5 specifications and procedures.

Front impact strength integrity shall be tested utilizing SAE J24202 with ECE R293 Annex 3 paragraph 4 equivalent energy.

Quasi-static roof strength shall be based on SAE J2422 paragraph 6 and ECE R293, paragraph 5 specifications and procedures.

A letter of certification shall be provided upon request by the department.

Y___N___

EXTERIOR GRAB HANDLES

There shall be extruded aluminum 24.00 inch grab handles mounted with stanchions at each door position. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

Y___N___

RED WARNING LIGHT, CAB HANDRAILS

The rear door cab handrails shall contain red integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the rear of the apparatus. The LED lights shall flash with the emergency warning lights.

AMBER SIDE TURN SIGNAL, CAB HANDRAILS

The front door cab handrails shall contain amber integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the rear of the apparatus. The LED lights shall flash with the directional signals.

Y___N___

EXTERIOR GRAB HANDLES - BLACK FINISH

The cab exterior grab handles shall have a black finish.

Y___N___

FRONT GRILLE

A stylized three-dimensional stainless-steel front grille shall be installed on the cab face.

The front grille shall be equipped with a radiator rock guard, behind the grille to assist in preventing damage to the radiator core.

The cab shall have one (1) engine air intake on the driver side of the cab, one (1) engine hot air exhaust on the officer side of the cab.

These openings shall be covered with a honeycomb wire screen, and a stainless steel grille.

Y___N___

CAB GRILLES - BLACK FINISH

The front cab grille and side grilles shall have a black finish.

Y___N___

Q2B MECHANICAL SIREN

The front bumper shall include an electro-mechanical Federal Q2B™ siren which is streamlined, chrome-plated and produces 123 decibels at 10-feet. The siren measures 10.50 inches wide x 10.00 inches high x 14.00 inches deep.

The siren shall be recess mounted in the cab front grille.

Y___N___

Q2B MECHANICAL SIREN

The FEDERAL Q2B mechanical siren shall have a bright chrome finish.

Y___N___

MASTER WARNING LIGHT CONTROL

To eliminate inadvertent operation the mechanical siren shall be operable only when the Master Warning Light switch is in the "ON" position and the parking brake is released.

Y___N___

SIREN BRAKE SWITCH

A momentary switch shall be provided in the driver's switch panel for operation of the siren brake.

This switch shall be backlit with the legend "SIREN BRAKE".

Y___N___

SIREN CONTROL SWITCH

One (1) foot switch for the siren shall be provided on the right side of the officer's cab floor.

Y___N___

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the front door.

An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

Y___N___

CAB ICC MARKER LIGHTING - BLACK FINISH

These lights are to be mounted in a black flange.

Y___N___

HEADLIGHTS

Four (4) rectangular hi performance LED headlights shall be supplied, two (2) each side on the front of the cab, in a bezel assembly. Each headlight housing shall include an integrated halo ring lamp around the outer edge.

When the parking brake is released and the master battery switch is in the on position, the low beam head lamps shall be illuminated.

HEADLIGHT POSITION

The headlights shall be mounted in the upper position on the front of the cab to accommodate high profile front bumper items.

Y___N___

HEADLIGHTS - POSITION

The headlights shall be in the upper position.

Y___N___

HEADLIGHTS - BLACK FINISH

The headlights shall have a black bezel.

Y___N___

TURN SIGNALS

Two (2) rectangular Whelen 600 series LED turn signal lamps shall be mounted in a separate bezel outboard of the front headlights one (1) each side. These lights shall be amber in color with a populated arrow.

Y___N___

LENSE COLOR

The lenses shall be clear in color.

Y___N___

LIGHT HOUSING - BLACK FINISH

These lights shall be mounted in a bezel with a black finish.

Y___N___

CAB MUDFLAPS

Mud flaps shall be installed behind the front tires. These mud flaps shall be a minimum of 22" wide to protect the underneath of the cab and body.

Y___N___

CAB GROUND LIGHTING - LED

There shall be one (1) white LED strip light in an armored extrusion shall be mounted beneath each cab door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits.

All cab ground lights shall automatically activate when any cab door is opened.

Y___N___

REARVIEW MIRRORS

Mekra Lang Aero mirrors shall be provided and installed, one (1) on each side of the cab, with a break-away bracket.

The flat glass head shall be heated and remote control. Below the flat mirror there shall be a convex head.

The mirror heads shall have a black high impact non-metallic housing.

Y___N___

CAB SIDE WINDOWS

Two AS-2 tempered glass, fixed side windows, 26-1/2" high x 16" wide shall be furnished, one on each side behind the forward doors. All glass shall be tinted. These windows shall be installed with a one-piece triple locked rubber lacing material.

Y___N___

ELECTRIC WINDOWS

The four (4) roll down door windows shall be equipped with electrically operated mechanisms to control the opening and closing of the windows. The controls shall be with a momentary switch in each door.

Three (3) additional switches shall be supplied in the driver's door to control all four (4) of the power windows from the driver's position.

Y___N___

REAR WINDOW SAFETY BARS

There shall be a one inch black powder coated grab bar installed on each rear door. This bar is to be installed on the rear door frame even with the window in the down position to prevent firefighters from using the glass in the door for a handle.

Y___N___

WINDOW TINTING

The cab side and crew door windows shall have GRAYLITE II tint (9% visible) to provide privacy and to assist in reducing the amount of heating inside the cab due to direct sunlight and unwanted glare.

Y___N___

UNDER CAB ENGINE MAINTENANCE LIGHTS

Two (2) LED engine maintenance lights shall be supplied beneath the cab. These lights shall illuminate automatically when the cab is tilted to the full tilt position.

Y___N___

STAINLESS CAB FENDERETTES

To reduce road splash on the cab sides, stainless steel fenderettes shall be installed around each the wheel opening.

Y___N___

CAB FENDERETTES - BLACK FINISH

The cab fenderettes shall have a black finish.

Y___N___

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect the back of the cab from scratches.

Y___N___

CAB TILT SYSTEM

The cab shall tilt a minimum of 45 degrees for ease of serving. Tilting shall be accomplished by means of a tilt pump connected to two (2) heavy duty lift cylinders. It shall be equipped with a positive locking mechanism (service lock) to hold the cab in the full tilt position. Release of the service lock shall be by means of a pull type cable assembly. The cylinders shall have a velocity fuse at the base to prevent the cab from falling in the event of a hydraulic hose failure. The cab shall be capable of tilting 90 degrees for major engine service, if necessary. The 90 degree cab tilt shall be accomplished by removing the cab cylinder pins, removing one bolt in the steering shaft, and removing the front bumper and treadplate.

The cab shall have a three (3) point cab locking system. To prevent undue stresses in the cab, the cab mounting shall incorporate a five (5) point load mounting system.

The front cab pivot/lock assemblies shall utilize four (4) radially loaded, bonded rubber, axial mounts. These mounts shall have a maximum radial load rating of 925 pounds each and a torsional rating of 25 lbs.-in/deg. Two one (1) inch diameter cab pivot pins shall be installed at the front of the cab.

The rear cab lock shall be center point mounted to prevent normal twist of the chassis from affecting the cab mounting, cab structure and windshield areas of the cab. This rear cab lock shall be mounted on a chassis crossmember to provide a stable platform for the locking system. The cab lock shall be mounted to a baseplate that is fastened to rubber isolators to reduce road noise and provide additional movement of the cab lock. This locking system shall automatically open prior to the cab tilting and automatically relatch when the cab is lowered completely into the travel position.

Two (2) outboard frame mounted urethane "V" blocks shall be provided at the rear of the cab. These dual purpose mounts shall align the cab upon lowering as well as provide non-latching support for the cab in the down position. With this system, extreme chassis twist shall allow the cab to move independently of the rear cab supports, reducing the structural stress damage often caused by outboard dual cab locking systems.

An electric-over-hydraulic cab tilt pump shall be supplied. This pump shall have a remote control for cab tilting operation. The control shall be "safety-yellow" in color.

A manual backup shall be provided for use in the event of electrical failure.

Y___N___

CAB TILT INTERLOCK

The cab lift system shall have a cab tilt interlock. The cab tilt shall not be able to be activated unless the master battery switch is in the on position with the parking brake set.

Y___N___

BACK-UP ALARM

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit and shall activate when the transmission is placed into reverse mode.

Y___N___

INTERIOR FINISH

The interior of the cab shall be painted with spatter paint, solid black in color. Black spatter paint is selected for ease of repairs when the interior is scratched.

The cab metal finish shall be covered with one coat of base self-etching primer to fill the small surface imperfections.

Then the interior of the cab is to be blocked and a coat of sealer-primer is to be sprayed to the interior finish.

Next a sealer primer is applied and will be sanded to a smooth finish ready for final color coat application.

Two (2) coats of finished paint are to be applied to a final thickness of 4 mills.

The sun visors shall be supplied black in color.

Y___N___

HEADLINER COLOR

The interior headliner of the cab shall be black in color.

Y___N___

REAR WALL COLOR

The interior rear wall covering of the cab shall be black in color.

Y___N___

FLOOR COLOR

The interior flooring material of the cab shall be black in color.

Y___N___

DOOR PANEL COLOR

The interior door panel material of the cab shall be black in color.

Y___N___

CAB EXTERIOR FINISH

The exterior doors and all fixed cab glass are to be removed from the cab prior to the paint and body process beginning.

The final finish of the cab shall be to fire apparatus standards; exhibiting excellent gloss durability and color retention properties.

PREPARATION

The removal of all contaminates and oxidation is essential to the final effect of a finish system, the cab shall be precleaned with a Wax and Grease Remover and prior to evaporation, towel dried.

To remove all oxidation and foreign materials, the cab shall be sanded with a 180 grit abrasive using an orbital type disc sander.

All weld marks and other major surface imperfections shall be filled with a polyester type body filler, prior to body filler application special attention shall be given to the areas requiring filler again sanding and cleaning.

The body fillers shall be thoroughly mixed in accordance with the manufacturer's directions.

After the final coat of filler is sanded, spray polyester shall be applied in sufficient amounts as to provide a final base and sanded with abrasive paper.

PRECLEAN

Within 45 minutes of pretreat the cab must be again washed with a Wax and Grease Remover using a "Scotch brite pad". Towel dry prior to evaporation.

Special precaution shall be taken NOT to saturate any polyester body fillers with the cleaning solvents.

PRETREAT AND PRIMERS

The pretreat and primer applications shall be made in two independent steps. A combined pre-treat/primer one product application shall not be allowed as a substitute.

The prepared substrate shall be pretreated with an acid curing 2-component Transparent Primer. This pretreat shall be designed to provide corrosion protection and to create an adhesive bond between the substrate and the surface applications.

It is critical that the body fillers not receive a saturation of solvents associated with the pretreat application. Only the pretreat over spray resulting from product application to the adjacent metal areas should be allowed to come in contact with the body fillers.

All polyester body fillers are porous, and shall absorb liquids. Solvents when absorbed not only soften but shall create swelling of the polyester filler. After sanding and later shrink the fillers shall create blemishes in the painted surfaces.

Prior to complete primer application, each area with applied body fillers be precoated with a 2-dry applications of primer (sander surfacer) of which shall be allowed to "Touch Dry" between coats. This procedure shall isolate the filled areas and protect them from subsequent product applications.

The primer (sander surfacer) shall be a poly-acrylic resin, zinc and chromate free surfacer that is designed to create a superb surface smoothness, increase the depth of color, and insure top coat gloss.

The cab after pretreat and precoat shall be primed with a 3 to 4 medium applications of a Hi-Build Tintable Surfacer.

To create a finish base that meets the rigid requirements of the fire and emergency service; the primed surface shall be dry sanded smooth thus removing all texture and surface imperfections with a 320 grit (minimum) sanding abrasive.

FINISH AND COLOR COATS

The color coat application shall consist of two to three applications of acrylic urethane color coat. After the color coat has been applied, the cabs shall be sprayed with 1.5 to 2.0 mills of clear coat finish. The clear coat finish is then sanded and buffed to remove any imperfections that can occur during the application of the color coat.

The final finish shall be free of dirt and sags and shall meet a minimum grade of 7 when compared to the "ACT" general orange peel standards by "ACT" Laboratories, Inc. Of Hillsdale, MI.

The final sanding and buffing of the clear coat shall result in a flat / glass like finish. The clear coat shall also provide a UV barrier to prevent fading and chalking.

Y___N___

PPG brand urethane materials will be used for the cab exterior paint.

Y___N___

DRIVER'S SEATING POSITION

Y___N___

The seat shall be H.O. Bostrom, Sierra 500, ABTS, with air ride suspension, high back seat with 5" of fore and aft slide adjustment. The seat shall have adjustments for height and ride with up to

3" of vertical travel. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

Y___N___

OFFICER'S SEATING POSITION

Y___N___

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

Y___N___

SCBA FILLER PADS

The SCBA seat is to have a filler pad installed to provide a smooth back for the firefighter when the air breathing apparatus is not in use.

Y___N___

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll^{TM} self-contained breathing apparatus bracket mounted into the seat cavity.

Y___N___

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

Y___N___

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

Y___N___

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll^{TM} self-contained breathing apparatus bracket mounted into the seat cavity.

Y___N___

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

Y___N___

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

Y___N___

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll^{TM} self-contained breathing apparatus bracket mounted into the seat cavity.

Y___N___

SEAT COVERING MATERIAL

The seats shall be covered in gray black Durawear™, a high strength-wear resistant, waterproof fabric.

Y___N___

SEAT BELT WARNING LABELS

The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

Y___N___

HELMET RESTRAINTS - CAB MOUNTED

(4) Zico UHH-1 helmet restraint(s) shall be shipped loose for installation by the Fire Department.

Y___N___

CAB SEAT LOGO

The seats shall be provided with HME-Ahrens Fox standard logos.

Y___N___

VEHICLE DATA RECORDER

The Apparatus shall be equipped with a Class1 “Vehicle Data Recorder” (VDR) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus.

The VDR will function as defined by NFPA utilizing the power train’s J1939 data.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

Y___N___

SEAT BELT MONITORING SYSTEM

A seat belt monitoring system shall be provided and installed in the cab. There shall be a graphic display for the seatbelt monitoring system that shall be integrated into the Information Display Screen.

The seat belt monitoring system shall indicate seat belt use for each individual seating position when the seat is occupied, if the seat belt is fastened or unfastened, when the parking brake is released. An audible alarm will sound when a seat is occupied but the seat belt is not fastened, or the seat is occupied after the belt was fastened.

Y___N___

IMMI 4FRONT SUPPLEMENTAL FRONT AIRBAG SYSTEM

The cab shall have a safety system designed and qualified by a 3rd party testing facility to protect occupants in the event of a frontal impact, and shall include the following:

- A supplemental restraint system (SRS) sensor. The sensor shall activate all pyrotechnic devices when a must fire event occurs. The SRS sensor shall perform real time diagnostics of all critical subsystems and shall record inputs immediately before and during a frontal impact event. An indicating light shall be visible on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.
- A driver side air bag shall be mounted in the steering wheel and is designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt.

- A driver side knee bolster air bag shall mount under the dash panel and around the steering column to protect the legs of the occupant, when used in combination with the 3-point seat belt.
- A passenger side knee bolster air bag shall be mounted in the panel, below the dash to protect the occupant legs when used in combination with a 3-point seat belt.

Both driver and passenger seating positions shall utilize buckle pretensioners to remove the slack and position the belted occupants in a frontal impact event.

Y___N___

EMS STORAGE COMPARMTENT

There shall be one (1) full height EMS storage compartment provided and installed in the cab with the door opening facing the front of the cab.

The approximate dimensions of the compartment shall be 40.00 inches wide by 20.00 inches deep.

The door opening shall be a minimum of 35.50 inches wide. The bottom of the cabinet shall contain a panel to raise the floor to maintain a flat floor 2.00 inches above the floor of the cab.

The interior side walls of the cabinet shall be fitted with channels for the installation of adjustable shelves.

Y___N___

EMS COMPARTMENT LOCATION

The EMS compartment shall be installed centered along the rear wall of the cab interior.

Y___N___

ROLL-UP DOOR - GORTITE

The EMS compartment shall be provided with a Gortite roll-up door.

The roll-up door shall be constructed of double-sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1.375 inches wide by .375 inches thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

Side channels for each door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of each door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

Y___N___

ROLL-UP DOOR LATCH

The door latch(es) shall be keyed locking stainless steel lift bars and shall be provided with a magnetic door switch system.

Y___N___

ALUMINUM SHELVES - ADJUSTABLE - EMS COMPARTMENT

The full depth EMS compartment shelving shall be made out of .190 inch smooth aluminum sheet material and shall have a flange 1.50 inches deep.

Each shelf shall be adjustable in height and held in place by extruded uprights.

There shall be a total quantity of two (2) provided.

Y___N___

EMS COMPARTMENT LIGHTING

Two (2) LED strip lights shall be provided and mounted inside the cabinet, one (1) on each side of the exterior access roll up door.

These lights shall be activated by the door switch.

Y___N___

110 VOLT RECEPTACLE

One (1) 120-volt AC, single receptacle shall be provided with a weatherproof cover centered in the upper portion of the EMS compartment.

This receptacle shall be wired to the shoreline connection for charging devices stored in the EMS compartment.

Y___N___

OUTLET CONFIGURATION

The electrical outlet shall be a NEMA 5-15, rated at 120-volt AC, 15-amp, duplex straight blade receptacle.

Y___N___

FRONT BUMPER

A formed steel bumper shall be provided the full width of the cab.

Y___N___

BUMPER EXTENSION

The front frame extension shall be bolted directly to the main rail. The extension and main rail joint shall have a 3/8" thick side plate for reinforcement. The completed apparatus must be able to be lifted at the front bumper without structural damage to the front extension for towing of a disabled vehicle.

The front bumper face shall extend 24 inches ahead of the front face of the cab skin.

Y___N___

FRONT JUMPLINE DISCHARGE

A 1-1/2" discharge shall be located at the front bumper. The front discharge shall be plumbed using 2" stainless steel pipe and wire reinforced high pressure hose coupled with stainless steel fittings.

The front discharge outlet shall have a 2" quarter-turn swing out valve with the control located on pump operator's panel.

The front discharge at the bumper shall be provided with a 2" to 1-1/2" polished stainless steel, 90° swivel adapter with 1-1/2" NST male outlet.

Y___N___

The discharge swivel shall be located to the right of the center hose well on the top of the gravel shield. The swivel shall be located so the pivot is vertical allowing for 360° rotation of the swivel.

Y___N___

AUTOMATIC DRAIN VALVE

One (1) Class 1, 3/4" automatic drain valve shall be supplied.

Y___N___

TOW HOOKS

Two (2) chromed tow hooks shall be provided and shall be attached directly to the front frame extension under the bumper. These tow hooks shall be attached with two Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

Y___N___

GRAVELSHIELD

A gravel shield shall be installed filling the area above the extension rails. This gravel shield shall be constructed of .125" thick NFPA non-skid, non-skid, aluminum treadplate. The gravel shield shall be supported at the front by the top flange of the steel bumper. At the rear, the gravel shield shall be supported by a steel substructure.

Y___N___

BLACK FINISH GRAVELSHIELD

The gravel shield shall have a black Line-X finish.

Y___N___

CENTER HOSEWELL

A hose well shall be mounted between the bumper extension rails in the center of the gravel shield. The hose well shall be constructed of 11 gauge stainless steel. The hose well shall be 31-1/2" wide x 9-1/2" deep x 19-1/2" front to back.

Y___N___

HOSEWELL COVER

The center hose well shall include a diamond plate hinged cover. The cover shall be notched to provide clearance for pre-connected jumpline's to be stowed in the hose well. A pair of stainless lift latches shall be used to open the lid with a gas shock to hold the lid in the open position.

Y___N___

HOSEWELL COVER

The hose well cover shall have a black Line-X finish.

Y___N___

LIGHTING - CENTER HOSEWELL

The interior of the center hose well shall be illuminated with a white LED light strip. The light strip shall have an aluminum extrusion to protect the light from damage. The light shall illuminate when the ground lights are activated on the apparatus.

Y___N___

OPEN GRATE MAT - HOSEWELL

The floor of the hose well shall be covered with black colored, open grate mat for improved ventilation.

Y___N___

LINE-X COATED BUMPER TOP TRIM GUARD

The top of the front bumper shall be fitted with protective trim piece coated with Line-X matching the color of the front bumper paint.

Y___N___

FRONT BUMPER UNDERBODY LIGHTING

There shall be one (1) 36.00 inch white LED strip light in an armored extrusion provided at bottom of the center of the front bumper.

All underbody ground lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

Y___N___

AIR HORNS

Dual stutter tone air horns shall be recessed into the front bumper, one each side immediately outside of the frame rails.

Y___N___

AIR HORN IGNITION CONTROL

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the "ON" position.

Y___N___

AIR HORN CONTROL SWITCH

The chassis air horns shall be controlled by a lanyard with a 'Y-chain'. The lanyard chain shall be mounted to the center of the overhead console within reach of both the driver and officer and shall terminate at the cab center.

Y___N___

HORN / SIREN SELECTOR SWITCH

The air horn and the electric horn are sounded simultaneously by depressing the horn button in the steering wheel.

A switch shall be supplied for the driver to control either the electric and air horns or the siren from the steering wheel horn button. This switch shall be clearly labeled with a back-lit legend.

Y___N___

ELECTRONIC SIREN

A Whelen electronic siren control, model 295SLSA1 full feature with 17 Scan-Lock siren tones including Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Air Horn, Electronic Mechanical Siren tones and Piercer tones and hard wired microphone, shall be provided.

Y___N___

SIREN CONTROL LOCATION

The siren control shall be mounted in the console on top of the engine enclosure within reach of the driver and officer.

Y___N___

SIREN SPEAKERS

There shall be two (2) Cast Products aluminum 100 watt speakers provided. The speakers shall be recessed into the front bumper, one (1) each side in the outboard position on the flat portion of the bumper.

Y___N___

SIREN SPEAKER

The Cast Products siren speaker shall have a black finish.

Y___N___

BUMPER PAINT

The bumper shall be painted gloss black enamel.

Y___N___

ONBOARD ELECTRONIC OPERATION AND MAINTENANCE MANUAL

There shall be a patented USB storage drive provided and installed in the vehicle cab to provide in-cab access to electronic copies of the Vehicle Operation and Maintenance Manuals with a cable and laptop.

The following information shall be accessible through the in-cab electronic Vehicle Operations Manual (eVom^{TM} - U.S. Patent 11,580,046).

- Operator's Manual
- Construction Bill of Material Parts List
- Water Tank Certification, if applicable
- Pump Certification, if applicable
- Pump Test Certification, if applicable

Electrical System:

- Complete wiring schematics for the vehicle.
- Diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.
- As built wiring information

Air System:

- Complete air system schematics for the vehicle.
- Diagrams of the vehicle showing the air tubing routing within the vehicle.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

Y___N___

ELECTRONIC & HARD COPY OPERATOR'S MANUAL

The manufacturer shall supply additional copies of the apparatus manuals. One (1) USB drive and one (1) hard copy Operator's Manual w/Parts List.

The following information will be included:

- Operator's Manual
- Construction Bill of Material Parts List
- Water Tank Certification, if applicable
- Pump Certification, if applicable
- Pump Test Certification, if applicable

Electrical System:

- Complete wiring schematics for the vehicle.
- Diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.
- As built wiring information

Air System:

- Complete air system schematics for the vehicle.
- Diagrams of the vehicle showing the air tubing routing within the vehicle.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

Y___N___

FIRE APPARATUS SAFETY GUIDE

Pursuant to NFPA 1901, 2016 edition, 40.20.2.3 (20) one (1) copy of the latest edition of FAMA's Fire Apparatus Safety Guide shall be supplied with the apparatus.

Y___N___

== CORE Pumper 22 - Pump Compt & Plumbing - 7.001 06/01/23 ==

Y___N___

PUMP COMPARTMENT CONSTRUCTION

The pump compartment shall be a self-supported structure mounted independently from the body and chassis cab. The apparatus pump compartment shall be a modular design and constructed of a combination of stainless steel structural tubing, angles and channels which does not support the fire pump or running boards.

A stainless steel framework shall provide the support for the mounting of the lower pump panels, speedlay hose beds (if specified), and pump access doors. Stainless steel structure shall be provided as support behind all valve control handles enabling a firm foundation for operation of the valve control.

Y___N___

PUMP COMPARTMENT MOUNTING

The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist. The pump compartment module shall be separated from the apparatus body and cab with a gap so that each may flex independently of the other.

The pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.

Y___N___

RUNNING BOARDS

The running boards shall be separate from the pump compartment module so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.

The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support.

Y___N___

STEP SURFACE

The left and right side running board step surfaces shall be covered in Laser Grip stainless steel meeting the current revision of NFPA 1901 for step requirements.

Y___N___

RUNNING BOARDS - BRIGHT FINISH

The running boards shall have a bright finish.

Y___N___

LEFT SIDE RUNNING BOARD HOSEWELL

The left side running board shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

Y___N___

HOLD DOWN STRAP RESTRAINTS

There shall be two (2) strap type hold downs provided and installed on the running board hose well storage. The straps shall be used to secure the stored equipment in place during transit.

Y___N___

DRI-DEK MATTING - RUNNING BOARD HOSEWELL

The floor of the running board hose well(s) shall be covered with Dri-Dek mat for improved ventilation.

Y___N___

MATTING COLOR

The Dri-Dek mat shall be black in color.

Y___N___

RIGHT SIDE RUNNING BOARD HOSEWELL

The right side running board shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

Y___N___

HOLD DOWN STRAP RESTRAINTS

There shall be two (2) strap type hold downs provided and installed on the running board hose well storage. The straps shall be used to secure the stored equipment in place during transit.

Y___N___

DRI-DEK MATTING - RUNNING BOARD HOSEWELL

The floor of the running board hose well(s) shall be covered with Dri-Dek mat for improved ventilation.

Y___N___

MATTING COLOR

The Dri-Dek mat shall be black in color.

Y___N___

RUNNINGBOARD LIGHTING

Two (2) white LED armor protected, strip lights shall be provided one (1) each side of the pump module mounted to the underside of the runningboard(s).

The lights shall be activated with the vehicle ground light circuit.

Y___N___

PUMP COMPARTMENT DUNNAGE

There shall be a dunnage compartment furnished on top of the pump module. The dunnage area shall be as large as possible. The floor shall be bolted in place and shall be removable for access to the fire pump components for major service.

Y___N___

DUNNAGE COMPARTMENT GRAB HANDLES

Two (2) extruded aluminum grab handles shall be provided and installed, one (1) on each side of the pump compartment module. The grab handles shall be mounted on the side of the dunnage compartment just below the top edge mounted horizontally to provide easy access to the dunnage compartment.

Molded rubber gaskets shall be installed under each grab handle to protect the surface of the dunnage compartment.

Y___N___

GRAB HANDLES - BRIGHT FINISH

The grab handles shall have a bright finish with chrome stanchions.

Y___N___

PUMP COMPARTMENT HEATER

One (1) 53,500 BTU auxiliary automotive type hot water heater shall be provided and installed inside pump compartment. The heater shall be connected to the truck engine coolant system and have shutoff valves in both the feeder and return lines.

The heater shall include a 12 Volt fan and controlled with a switch located at the pump operator's panel.

The switch shall be of a weather resistant type and be clearly labeled for ease of identification.

Y___N___

HEAT PAN ENCLOSURE

A removable casing constructed of aluminum, completely enclosing the underside of the pump compartment and heated by the engine exhaust, shall be provided and installed.

The heat pan assembly shall include access panels that can be easily removed from their mounting locations.

Y___N___

PUMP COMPARTMENT WORK LIGHT

The pump compartment shall have one (1) white LED strip light to provide illumination to the interior of the pump compartment. The strip light shall be mounted transverse at the rear of the pump module with the light directed to the front.

The light shall have a weather resistant, toggle style, on/off switch located inside the pump compartment adjacent to the door hinge area.

The power for the pump module light shall be switched thru the battery master switch.

Y___N___

TOP MOUNT PUMP CONTROL PANEL

All pump controls and gauges shall be located above the fire pump in a top mounted operator's control panel and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized.

An upper framework above the pump compartment shall encompass the top mount pump operator's panel and dunnage compartment and an area for a deck gun (if specified).

The gauge panel exterior shall be made of 10-gauge stainless steel.

The pump operator's panel shall be removable in one (1) section for ease of maintenance. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring system, and pressure control system. The gauge panel shall be a removable bolt-on single panel to allow access to all gauge tubing, switches, and control wiring.

The lower portion of the operators panel shall contain the controls for the inlets and discharges. The controls for all the drains shall be located on the lower side panels.

There shall be two (2) pump house service doors located in the upper portion of the left and right side pump panels. These panels shall be as large as possible and provide a minimum opening size of 41.00 inches wide by 14.00 inches high. Each access door shall be secured with two (2) push button latches.

Y___N___

PUMP PANEL FINISH

All stainless panels used in the construction of the pump house.

The side panels shall have a black finish.

Y___N___

VALVE CONTROLS

Unless specified otherwise, the intake and discharge valves shall be controlled with a top mount valve control assembly.

The handles shall be chrome plated zinc twist-lock handles of an ergonomic design with a recessed area for a color-coded name plate.

Top control connections to each 2.50 inch and larger valves shall be made by the use of stainless aircraft cable with stainless steel mounting bracketry and hardware. Top controlled connections to valves larger than 2.50 inches by means of relay arms with solid rods are not acceptable.

Y___N___

PUMP PANEL IDENTIFICATION TAGS

All discharges and intakes shall have plastic color-coded Innovative Controls identification tags, with each discharge having its own unique color.

Color-coding shall include the labeling of the inlet, outlet and the corresponding drain for each.

Y___N___

STAINLESS STEEL WALKWAY WITH ALUMINUM DIAMOND PLATE STEP SURFACES

A walkway shall be provided with the top mount pump module located directly behind the cab.

The walkway shall be separate from the pump panel and running boards so that each may flex independently of the other and the walkway shall be bolted directly to the chassis frame rails.

The walkway shall be constructed of stainless steel gussets and channels to provide a framework for stepping and standing areas. The surface of the walkway shall be embossed aluminum diamond plate.

The walkway shall measure 96.00 inches wide (side to side) x 21.00 inches long (front to back).

Y___N___

WALKWAY STORAGE COMPARTMENTS

Two (2) walkway enclosed storage compartments shall be provided below the top mount walkway, one (1) on each side of the walkway step area.

For each compartment, the walls and floors shall be stainless steel and shall include an aluminum treadplate door.

The doors shall be vertically hinged with a full length stainless steel piano hinge and secured with a "D"ring style latch.

If the door is not properly closed and the parking brake is released, it shall activate the hazard light in the cab to alert the crew.

Y___N___

WALKWAY STORAGE COMPARTMENT FINISH

The interior of each walkway storage compartment shall be a natural finish.

Y___N___

WALKWAY GRAB RAILS

Two (2) extruded aluminum grab rails shall be provided, one (1) each side of the cab rear wall to provide easy access to the pump panel walkway.

Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

Y___N___

GRAB HANDLES - BRIGHT FINISH

The grab handles shall have a bright finish with chrome stanchions.

Y___N___

WALKWAY LIGHTS

Two (2) white LED lights shall be provided and installed at the front forward face of the pump compartment module to provide lighting to the walkway. One (1) light shall be mounted outboard on each side of the module.

Y___N___

STEP LIGHT ACTIVATION

The step light shall be activated when the park brake is set.

Y___N___

SPEEDLAY HOSE BEDS

Two (2) speedlay hose beds, vertically stacked with bay #1 in the top position, shall be provided in the forward portion of the pump compartment module. The speedlay hose beds shall be constructed as an integral part of the pump compartment and shall span the entire width of the pump compartment module.

The speedlays shall be 12.00 inches wide to accommodate a double stack of hose. The top of the speedlay unit shall have a brushed stainless steel shelf to cover the upper hose area and to provide a working surface for the pump operator.

Y___N___

PUMP COMPARTMENT FRONT WALL

The front wall (walkway side) of the speedlay assembly shall have an aluminum diamond plate cover attached with mechanical fasteners.

Y___N___

FRONT WALL FINISH

The aluminum diamond plate shall be a bright finish.

Y___N___

SPEEDLAY HOSE TRAYS

Four (4) removable aluminum hose tray(s) shall be provided for the speedlay hose beds.

There shall be a red webbed strap at each end of the tray for easy removal of the tray.

Y___N___

PUMP COMPARTMENT WIDTH

The width of the pump compartment (front to back) shall be 61.00 inches.

Y___N___

WALKWAY GRAB HANDLES

Two (2) extruded aluminum grab handles shall be provided and installed, one (1) on each side of the pump compartment module above the top speedlay to provide easy access to the walkway.

Molded rubber gaskets shall be installed under each grab handle to protect the surface of the dunnage compartment.

Y___N___

GRAB HANDLES - BRIGHT FINISH

The grab handles shall have a bright finish with chrome stanchions.

Y___N___

PRESSURE GOVERNOR AND MONITORING DISPLAY

Fire Research PumpBoss series PBA400 pressure governor and monitoring display kit with dual 600 PSI discharge and intake mounted pressure sensors 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" wide. A control knob that uses optical technology shall adjust pressure or RPM settings. The control knob shall be 2.00 inches 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 1.75 inches 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:

CHECK ENGINE and STOP ENGINE warning LEDs
Engine RPM; shown with four daylight bright LED digits more than 1/2" high
Engine OIL PRESSURE; shown on a dual color (green/red) LED bar graph display
Engine COOLANT TEMPERTURE; 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
PSI / RPM setting; shown on a dot matrix message display
PSI and RPM operating mode LEDs
THROTTLE READY LED.

A 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 night time 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 Transmission Temperature
Low Battery Voltage (Engine Off)
Low Battery Voltage (Engine Running)
High Battery Voltage
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 monitoring pressure display shall be programmed at installation for a specific engine.

PRESSURE GOVERNOR and MONITORING DISPLAY BUZZER

Fire Research PumpBoss Z1 option for an audible alarm buzzer shall be installed. The buzzer shall sound when a signal from the PumpBoss activates it.

Y___N___

MASTER GAUGES

Innovative Controls 4.00 inch (100 mm) gauges shall be provided and installed for the master intake and master discharge gauges at the pump operator's panel.

The gauges shall be liquid filled with an over-sized internal breathing diaphragm inside the case that compensates for liquid fill expansion caused by high temperatures- preventing plug failure and preserving gauge accuracy in extreme environments.

A KEM-X Socket Saver diaphragm, located in the stem, eliminates freeze-up by preventing water from entering and/or clogging the gauge internals while containing a low temperature instrument oil that fills and protects the socket and the bourdon tube.

The molded glass-filled Nylon 66 case will not corrode nor contribute to yellowing and the case will expand and contract at a similar rate as the fill plug during temperature fluctuations thus preventing leaks.

Y___N___

GAUGE SCALE

The master intake gauge shall be marked for a reading from -30 to 400 PSI and the master discharge shall be marked for reading a discharge pressure of 0 to 400 PSI.

Y___N___

GAUGE FACE COLOR

Each gauge shall have black markings on a white face.

The master intake gauge shall be labeled 'PUMP INTAKE' with a burgundy tag.

The master discharge gauge shall be labeled 'PUMP DISCHARGE' with a black tag.

Y___N___

LED BACKLIT GAUGE

The master intake and discharge gauges shall be illuminated with white LED backlighting.

The gauge backlighting shall be activated when the pump panel light hood lights are illuminated.

Y___N___

BEZEL

The master intake and discharge gauges shall be mounted in a single Innovative Controls bezel.

Y___N___

MASTER GAUGE TEST PORTS

Adjacent to each master gauge there shall be a pressure tap to provide simultaneous readings of the vacuum and pressure exerted on the individual gauge.

Y___N___

DISCHARGE GAUGES

Innovative Controls discharges gauge shall be provided and installed for reading the pressure of each discharge greater than 1.50 inches (38 mm) in diameter, unless otherwise specified, at the pump operator's panel. The gauges shall be 2.50 inches in diameter.

The gauges shall be liquid filled with an over-sized internal breathing diaphragm inside the case that compensates for liquid fill expansion caused by high temperatures- preventing plug failure and preserving gauge accuracy in extreme environments.

A KEM-X Socket Saver diaphragm, located in the stem, eliminates freeze-up by preventing water from entering and/or clogging the gauge internals while containing a low temperature instrument oil that fills and protects the socket and the bourdon tube.

The molded glass-filled Nylon 66 case will not corrode nor contribute to yellowing and the case will expand and contract at a similar rate as the fill plug during temperature fluctuations thus preventing leaks.

Y___N___

GAUGE SCALE

Each shall be marked for a reading from 0 to 400 PSI.

Y___N___

GAUGE FACE COLOR

Each gauge shall have black markings on a white face.

Y___N___

LED BACKLIT GAUGE

Each pressure gauge shall be illuminated with white LED backlighting.

The gauge backlighting shall be activated when the pump panel light hood lights are illuminated.

Y___N___

WATER TANK LEVEL INDICATOR

An Innovative Controls Soft-Glo water tank level gauge shall be provided and installed at the pump operator's panel.

The display modules are divided into four (4) distinct sections that show the volume of liquid in the corresponding tank using multi-color RGB superbright LEDs. Tank level indication is enhanced by a 180° wide-angle diffusion lens in front of the LEDs. The LEDS are diffused by a proprietary method that creates an illumination effect that remains bright and visible in sunlight but eliminates the typical irritation to an operator’s eyes traditionally caused by bright LEDs at night.

Y___N___

BEZEL - BLACK

A black bezel shall be provided for the gauge(s).

Y___N___

CHASSIS WATER TANK LEVEL INDICATOR

There shall be two (2) Innovative Controls Soft-Glo Mini Monster Strip Light Displays provided and installed, one (1) each side at the rear of the cab. The displays shall show the volume in the tank on four (4) distinct illuminated levels.

Tank level indication is enhanced by the use 180° wide-angle diffusion lenses in front of the LEDs. The LEDS are diffused by a proprietary method that creates an illumination effect that remains bright but eliminates the typical irritation to an operator’s eyes traditionally caused by bright LEDs. The display shall mimic the main pump panel mounted display via CAN Bus.

Y___N___

BEZEL - BLACK

A black bezel shall be provided for the gauge(s).

Y___N___

REAR BODY WATER TANK LEVEL INDICATOR

There shall be one (1) Innovative Controls Soft-Glo Mini Monster Strip Light Display provided and installed at the rear of the apparatus body. The display shall show the volume in the tank on four (4) distinct illuminated levels.

Tank level indication is enhanced by the use 180° wide-angle diffusion lenses in front of the LEDs. The LEDS are diffused by a proprietary method that creates an illumination effect that remains bright but eliminates the typical irritation to an operator’s eyes traditionally caused by bright LEDs. The display shall mimic the main pump panel mounted display via CAN Bus.

Y___N___

BEZEL - BLACK

A black bezel shall be provided for the gauge(s).

Y___N___

SMART ROCKER SWITCH PANEL

There shall be a Class One Smart Rocker Switch Bank panel, containing four (4) switches, provided and installed at the pump operator's panel.

The switches shall be waterproof, backlit rocker type, with the specific function laser engraved on the switch face.

The switch functions will be detailed in the specifications with the individual components.

Y___N___

AIR HORN ACTIVATION SWITCH

A switch shall be located in the Smart Switch bank panel to activate the chassis air horn.

The switch shall be a momentary rocker switch with a cover and shall be supplied with the proper identification label.

Y___N___

MIDSHIP PUMP

The pump shall be a Hale Q-Max model, single stage midship pump. The pump shall have a capacity of 1500 gallons per minute, measured in US gallons.

Y___N___

PUMP CONSTRUCTION AND ASSEMBLY

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA 1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (207 MPa). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be horizontally split on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis. The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance.

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wraparound double labyrinth design for maximum efficiency. No exceptions.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super finished under packing with galvanic corrosion (zinc foil separators in packing) protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Gearbox – G Gearbox

Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. 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.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give 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. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

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.

Y___N___

FIRE PUMP WARRANTY

A standard 5 year warranty (Parts and Labor for the first two years and parts only years 3 - 5) will be provided by the pump manufacturer, Hale products Inc.

Y___N___

ALTITUDE REQUIREMENTS

The apparatus shall be designed to meet the specified rating at 0 to 2000 feet altitude.

Y___N___

AIR PRIMER SYSTEM

The priming system shall be a Trident Emergency Products compressed air powered high efficiency, multi-stage, venturi based Air Prime System. A single panel mounted control will activate the priming pump and open the priming valve to the pump. The primer shall be a three (3) -barrel design.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

The priming components shall be mounted above the highest priming point on the suction side of the pump to permit air removal and allow for drainage. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass ‘wye’ type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

Performance, Safety, and NFPA Compliance

The priming system shall be capable to a vertical lift to 22 inches of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a three-barrel multi-stage internal “venturi nozzles” within the primer body. The noise level during operation of the primer shall not exceed 75 Db.

Air Flow Requirements

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied ‘protected’ air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

Y___N___

PRIMER CONTROL

The primer control shall have a manually operated, panel mounted “push to prime” air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

Y___N___

WARRANTY

The primer shall be covered by a five (5) year parts warranty by Trident.

Y___N___

ELECTRIC OVER AIR PUMP SHIFT

The pump shift shall be electric over air operated and shall incorporate an electric switch in the cab and a MAC valve on the chassis to operate the pump transmission from road to pump.

The pump shift switch shall be mounted in the cab and identified as "PUMP SHIFT" and shall include instructions permanently inscribed on the pump shift switch plate. The in-cab switch shall be an electric locking lever style switch that has a spring-loaded locking collar that locks in "Road" or "Pump" mode.

The pump shift control assembly shall incorporate an indicating light system. There shall be two (2) lights adjacent to the pump shift control panel in the cab to show the position of the pump when the control is moved to "Pump" position. One (1) indicator light shall notify the operator when the shift has been completed to PUMP, labeled as "PUMP ENGAGED". The second indicator light in the cab will notify the operator when the chassis transmission is in correct pumping gear, labeled as "OK TO PUMP".

A third LED indicator light for throttle ready shall be provided adjacent to the throttle control at the pump operator's panel to indicate when the required interlock conditions are met to begin pump operations.

Y___N___

MECHANICAL SEAL

The fire pump shall be provided with a mechanical pump seal. One (1) is required on the suction, inboard, side of the pump. The mechanical seal shall be 2.00 inches in diameter and shall be spring loaded, maintenance free and self-adjusting.

Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with Teflon backup seal.

Y___N___

ANODE SYSTEM

To reduce the effect of galvanic action the pump shall be equipped with two (2) zinc anodes. One (1) anode is to be installed on the inlet (suction) side of the system and one (1) anode is to be installed on the pressure (outlet) side of the system.

Each anode brass cap is to be drilled with a .125 inch diameter hole to provide an indicator when the anode alloy element is to be replaced.

Y___N___

THERMAL PROTECTION WITH LIGHT

The pump shall be equipped with a TRV-L, thermal protection device, which monitors the water temperature of the pump and relieves water when the temperature inside the pump exceeds the preset value of the relief valve (120 degrees F / 49 degrees C).

The TRV shall automatically dump a controlled amount of water to the atmosphere when the pump water temperature exceeds the preset value. The valve shall automatically close when the water temperature cools to below the preset value.

An aluminum composite panel placard with a visual warning lamp and test button shall be provided on the operator's panel.

The warning light shall illuminate when the Thermal Relief Valve is open and discharging water.

Y___N___

INTAKE PRESSURE RELIEF VALVE

A Task Force Tips model #A18XX pressure relief valve shall be provided. The valve shall have an easy to read adjustment range from 90 to 300 PSI in 90, 125, 150, 200, 250, 300 PSI increments.

For corrosion resistance the cast aluminum valve shall be hard-coat anodized with a powder coat interior and exterior finish. The valve shall meet (NFPA) 1901, Standard for Automotive Fire Apparatus, requirements for pump inlet relief valves.

The valve shall be configured with a male NPT threaded discharge outlet.

The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe.

The adjustment control shall be located behind the street side pump panel.

The unit shall be covered by a five (5) year warranty.

Y___N___

PUMP COOLING LINE

A 3/8" cooling line shall be installed to recirculate water from the pump back through the pump transfer case, to cool the pump during prolonged pumping operations.

The cooling line shall be controlled at the operator's position with an in-line ball valve.

Y___N___

HEAT EXCHANGER DISCHARGE

A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat exchanger to assist in engine cooling during pumping operations.

The heat exchanger line shall be controlled at the pump operator's panel with an in-line ball valve.

Y___N___

MASTER DRAIN

The apparatus shall be equipped with a Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

Y___N___

LEFT SIDE STEAMER INLET

There shall be one (1) 6.00 inch steamer inlet furnished on the left side pump panel. The suction inlet shall have National Standard Threads (NST) and include a removable strainer provided inside the external inlet.

Y___N___

LARGE DIAMETER CAP

A 6.00 inch chrome plated cap with long handles shall be installed on the steamer inlet. The cap shall be capable of withstanding 500 PSI.

The cap shall be National Standard Thread and shall include the apparatus manufacturer's logo in the center of the cap.

Y___N___

RIGHT SIDE STEAMER INLET

There shall be one (1) 6.00 inch steamer inlet furnished on the right side pump panel. The suction inlet shall have National Standard Threads (NST) and include a removable strainer provided inside the external inlet.

Y___N___

LARGE DIAMETER CAP

A 6.00 inch chrome plated cap with long handles shall be installed on the steamer inlet. The cap shall be capable of withstanding 500 PSI.

The cap shall be National Standard Thread and shall include the apparatus manufacturer's logo in the center of the cap.

Y___N___

DRAIN VALVES

An Innovative Controls .75 inch quarter turn drain valve shall be included on each applicable discharge and gated intake. A side stem, long stroke chrome plated lift handle shall be provided on the drain valve to facilitate use with a gloved hand. The drain valve shall have an ergonomically designed handle with a recessed verbiage tag area easily read by the operator before opening.

The drain valve shall be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus away from the pump operator.

Y___N___

LEFT SIDE INLET

There shall be one (1) gated suction inlet installed on the left side of the apparatus with the following specified components.

Y___N___

INLET VALVE

A 2.50 inch (65 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

VALVE CONTROL

The valve shall be controlled with a manual control handle at the pump operator's panel.

Y___N___

INTAKE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

INTAKE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NST swivel female straight adapter with screen that extends through the pump panel.

One (1) 2.50 inch (65 mm) chrome plated rocker lug plug, secured by a chain.

Y___N___

INLET LOCATION

The inlet shall be located on the pump panel in the rearward position to the pump steamer inlet.

Y___N___

LEFT SIDE DISCHARGE #1

There shall be one (1) discharge installed on the left side of the apparatus with the following specified components.

Y___N___

DISCHARGE VALVE

A 2.50 inch (65 mm) Akron Brass quarter-turn swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE LOCATION

The discharge shall be located on the pump panel in the forward position to the pump steamer inlet.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NST male straight adapter that extends through the pump panel.

One (1) 2.50 inch (65 mm) chrome plated 30-degree elbow.

One (1) 2.50 inch (65 mm) rocker lug cap with lug vent, secured by a chain.

Y___N___

LEFT SIDE DISCHARGE #2

There shall be one (1) discharge installed on the left side of the apparatus with the following specified components.

Y___N___

DISCHARGE VALVE

A 2.50 inch (65 mm) Akron Brass quarter-turn swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE LOCATION

The discharge shall be located on the pump panel in the rearward position to the pump steamer inlet.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NST male straight adapter that extends through the pump panel.

One (1) 2.50 inch (65 mm) chrome plated 30-degree elbow.

One (1) 2.50 inch (65 mm) rocker lug cap with lug vent, secured by a chain.

Y___N___

RIGHT SIDE DISCHARGE #3

There shall be one (1) discharge installed on the right side of the apparatus with the following specified components.

Y___N___

DISCHARGE VALVE

A 2.50 inch (65 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE LOCATION

The discharge shall be located on the pump panel in the forward position to the pump steamer inlet.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NST male straight adapter that extends through the pump panel.

One (1) 2.50 inch (65 mm) chrome plated 30-degree elbow.

One (1) 2.50 inch (65 mm) rocker lug cap with lug vent, secured by a chain.

Y___N___

RIGHT SIDE DISCHARGE #4

There shall be one (1) discharge installed on the right side of the apparatus with the following specified components.

Y___N___

DISCHARGE VALVE

A 3.00 inch (77 mm) Elkhart Brass heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE LOCATION

The discharge shall be located on the pump panel in the rearward position to the pump steamer inlet.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 3.00 inch (77 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 3.00 inch (77 mm) NST female rigid rocker to a 5.00 inch Storz hard coated aluminum adapter.

One (1) 5.00 inch (77 mm) Storz cap with lanyard and suction gasket.

Y___N___

RIGHT REAR DISCHARGE

There shall be one (1) discharge installed on the right rear of the apparatus below the hose bed with the following specified components.

Y___N___

DISCHARGE VALVE

A 2.50 inch (65 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

REAR DISCHARGE WATER TANK SLEEVE

The water tank shall be provided with one (1) 4.00 inch sleeve from the front of the tank to the rear of the tank for the rear discharge plumbing.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NST male straight adapter that extends through the rear of the body.

One (1) 2.50 inch (65 mm) chrome plated 30-degree elbow.

One (1) 2.50 inch (65 mm) rocker lug cap with lug vent, secured by a chain.

Y___N___

DELUGE WATERWAY

There shall be one (1) deluge waterway installed above the pump on the apparatus with the following components.

Y___N___

DISCHARGE VALVE

A 3.00 inch (77 mm) Elkhart Brass heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DELUGE PLUMBING

The deluge waterway shall consist of 3.00 inch (77 mm) piping up through the pump compartment.

Y___N___

DELUGE DRAIN

The deluge pipe shall be drained with a 1/4 turn manual drain located at the lowest point of the waterway plumbing below the pump area for ease of access.

The valve shall be brass with 3/4" NPT female inlet and outlet thread.

Y___N___

EXTEND-A-GUN

A Task Force Tips (TFT) model XG18VL-XL, 18.00 inch "Extend-A-Gun" unit and mounting kit shall be provided and installed on the deluge discharge to elevate a deck gun 18.00 above the travel position.

Y___N___

DECK GUN MONITOR

A Task Force Tips (TFT) "Crossfire" model #XFC-52 monitor package shall be provided and installed on the deluge discharge outlet.

The monitor package shall be furnished with the following components:

- One (1) Ground Base with two (2) 2.50 inch inlets (XFH-2NJ)
- One (1) Flow Master Stream Nozzle (M-RS1000-NJ)
- One (1) 10.00 inch Stream Straightener (XF-SS10)
- One (1) Quad Stacked Tips (MST-4NJ)
- One (1) "Crossfire" storage bracket (XF-B)

Y___N___

SINGLE CROSSLAY HOSEBED

One (1) cross lay hosebed shall be located on top of the pump compartment, directly rearward of the pump operator's panel.

An upper framework separate of the pump compartment shall encompass the cross lay hosebed. The floor of this section shall be a bolt-on design to provide service access to the pump and plumbing.

Y___N___

2 1/2" CROSSLAY

One (1) single stack cross lay with the following specified components shall be provided for up to 200 feet (60 m) of 2.50 inch (65 mm) hose.

The single stack cross lay hosebed shall have inside dimensions of 4.75 inches (121 mm) wide by 19.00 inches (483 mm) high by 72.00 inches (1829 mm) long.

Y___N___

DISCHARGE VALVE

A 2.50 inch (65 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.50 inch (65 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.50 inch (65 mm) NPT x 2.50 inch (65 mm) NST 90-degree swivel located in the hose bed.

Y___N___

CROSSLAY HOSE GUIDES

Brushed stainless steel hose guides shall be provided on the left and right side of the cross lays.

Y___N___

CROSSLAY COVER

The cross lay area shall have a vinyl cover installed on the top and sides of the cross lay area.

Y___N___

COVER COLOR

The vinyl cross lay cover shall be Midnight Black in color.

Y___N___

1 3/4" SPEEDLAY - TOP SPEEDLAY

One (1) speedlay hose bed with the following specified components shall be provided for up to 250 feet (76 m) of 1.75 inch (44 mm) hose in the top bay.

The speedlay hose bed shall have inside dimensions of 10.00 inches (254 mm) wide by 9.50 inches (241 mm) high by 71.00 inches (1803 mm) long.

Y___N___

DISCHARGE VALVE

A 2.00 inch (50 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.00 inch (50 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.00 inch (50 mm) NPT x 1.50 inch (38 mm) NST 90-degree swivel located in the hose bed.

Y___N___

1 3/4" SPEEDLAY - LOWER SPEEDLAY

One (1) speedlay hose bed with the following specified components shall be provided for up to 250 feet (76 m) of 1.75 inch (44 mm) hose in the lower bay.

The speedlay hose bed shall have inside dimensions of 10.00 inches (254 mm) wide by 9.50 inches (241 mm) high by 71.00 inches (1803 mm) long.

Y___N___

DISCHARGE VALVE

A 2.00 inch (50 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

DISCHARGE VALVE CONTROL

The discharge control valve shall be a manual control handle at the pump operator's panel.

Y___N___

DISCHARGE PLUMBING

The plumbing shall consist of 2.00 inch (50 mm) piping and shall incorporate a manual drain control installed below the pump area for ease of access.

Y___N___

DISCHARGE TERMINATION

The termination shall include the following components:

One (1) 2.00 inch (50 mm) NPT x 1.50 inch (38 mm) NST 90-degree swivel located in the hose bed.

Y___N___

SPEEDLAY HOSE GUIDES

There shall be poly guides provided and installed at the vertical, upper and lower edges of each speedlay bay opening on both sides of the pump compartment to protect the hose and couplings.

Y___N___

SPEEDLAY COVER

A single vinyl coated nylon cover shall be provided over the speedlay hose beds, one (1) cover on each side of the pump compartment. The cover shall be secured with "Lift-A-Dot" fasteners.

Y___N___

SPEEDLAY VINYL SIDE COLOR

The vinyl speedlay side covers shall be Midnight Black in color.

Y___N___

TANK TO PUMP LINE

The connection between the tank and the pump shall be capable of the flow recommendations as set forth in (NFPA) 1901, Standard for Automotive Fire Apparatus, latest revision and shall be tested to those standards when the pump is being certified.

The tank to pump line shall run from the pump to the front face of the water tank and down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.

The tank to pump shall be provided with the following specified components:

TANK TO PUMP PLUMBING

The tank to pump line shall be 3.00 inch I.D. piping.

Y___N___

TANK TO PUMP VALVE

A 3.00 inch (77 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

VALVE CONTROL

The valve shall be controlled with a manual control handle at the pump operator's panel.

Y___N___

TANK RE-FILL LINE

One (1) 2.00 inch (51 mm) tank fill/recirculating line shall be installed from the pump directly to the booster tank plumbed with stainless steel plumbing and flexible Victaulic couplings.

The tank re-fill line shall be provided with the following specified components:

Y___N___

TANK FILL VALVE

A 1.50 inch (38 mm) Elkhart Brass quarter-turn heavy duty swing-out valve.

Y___N___

VALVE CONTROL

The valve shall be controlled with a manual control handle at the pump operator's panel.

Y___N___

FOAM SYSTEM

A Hale "SmartFOAM" 5.0 GPM foam system shall be supplied on the apparatus. The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow and remain consistent within the specified flows and pressures.

SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following:

1) Foam Pump
2) Class 1 UltraView SmartFOAM Controller
3) Foam Concentrate Strainer
4) Integral Check Valve/Injector Fitting
5) Flow meter
6) Control Cables
7) Low Tank Level Switch
8) Water Discharge Check Valves

FOAM PUMP

The foam proportioning system shall be compatible with Class A and B foam concentrates. The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above-mentioned foam concentrate type. The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 5.0 GPM (19 LPM) foam concentrate flow rate with maximum operating pressure of 250 PSI (17.2 bar).

The pump is close coupled to the electric motor thereby eliminating maintenance of an oil-filled gearbox. A relief valve mounted on the foam pump that is constructed of stainless steel, protects the foam pump and foam concentrate discharge hoses from over pressurization and damage. This valve is set to 300PSI (21 bar).

FOAM CONCENTRATE STRAINERS

Field serviceable foam concentrate strainers shall be provided in the foam concentrate suction line. When the strainer shall not be subject to flushing water pressure a plastic bodied in-line strainer shall be used. The strainer body shall be constructed of plastic with a stainless-steel mesh screen. A shutoff valve shall be provided to enable isolation of the strainer for service. The strainer shall be mounted in the pump compartment. The strainer shall be a low-pressure device and shall not be subject to flush water pressure.

Where strainers are subject to flush water pressure, panel mounted field serviceable foam concentrate strainers rated at 500 PSI (34 BAR) minimum shall be installed on the pump panel. The strainer body shall be constructed of brass with a chrome cap and an easily removable stainless steel mesh screen for field servicing. The valve inlet offers ½ inch NPT threads with a fitting to connect a ½ inch ID foam concentrate suction hose.

INJECTOR FITTING AND CHECK VALVES

To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/injector fitting. The check valve/injector fitting shall be of one-piece construction of brass and stainless steel. To prevent contamination of the water pump and apparatus booster tank wafer type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

FLOWMETER

A paddlewheel type flow meter shall monitor water flow in foam capable discharges. The flow meter body shall be constructed of bronze and the sensor assembly shall be locked into the tee with a pin and screw on cap. The flow meter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements.

One (1) flow meter is required for proper operation of the foam proportioning system. Power for the flow meter sensor shall be provided through the electrically shielded cable set from the control unit. Flow meters having NPT threaded and Victaulic connections shall be used in the water discharge piping.

The flow meter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

CONTROL CABLES

The cables for connection of the control unit, distribution box, flow meter sensor, flow meter display units, pressure transducers and feedback sensor shall be 100% electrically shielded molded male by female cordsets. The cordsets shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent mis-connection and improper system operation. Shielding shall be provided by an aluminized mylar shield within the PVC outer jacket. A drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. Coupling nuts on the cordset ends shall be constructed of nickel coated brass. When properly connected the connections shall be sealed to NEMA 4X or equal.

LOW TANK LEVEL SWITCH

A low tank level switch shall be installed in the foam concentrate tank. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor shall be mounted on the side of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor.

FOAM SUPPLY

The foam proportioning system shall be supplied from a separate apparatus mounted foam concentrate storage tank. The tank shall be constructed of materials compatible with foam concentrates being used in the system. Provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements.

DOCUMENTATION

The foam proportioning system when delivered to the end user shall include a foam concentrate compatibility list and two (2) Description, Installation and Operation Manuals. The foam proportioning system shall have a one (1) year limited manufacturer's warranty.

Y___N___

FOAM SYSTEM SUPPLY

The system shall be supplied by a single foam tank that shall be monitored by the control display. The display shall flash a "low concentrate" warning for two minutes when the foam tank runs low. In the event that no additional concentrate is added to the tank, the foam concentrate pump shall be deactivated.

Y___N___

FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be provided. The foam tank shall have an anti-foaming fill stack and removable screen located in an accessible area. The foam tank fill tower shall be equipped with a latch, pressure/vacuum vent and have a sealed airtight cover.

The foam tank shall be plumbed to the on board "Class A" foam system.

The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"
"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

Y___N___

FOAM TANK LOCATION

The foam tank shall be integral with the booster water tank provided with a color coded decal provided on the foam fill tower to identify the fill tower as foam.

Y___N___

FOAM TANK DRAIN

There shall be a 1.00 inch (25.4 mm) quarter turn drain valve installed at the lowest point to drain the foam tank. The foam tank shall drain directly to the surface below the apparatus without contacting other body or chassis components.

The drain line shall be labeled.

Y___N___

SINGLE TANK FOAM TANK REFILL SYSTEM

A truck mounted 12-Volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam solution up to the foam cell in the hose bed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

System features:

- Weather proof on/of rocker switch with integral green power on indicator light
- Red refill PUMP ON indicator light
- Automatic tank fill shutoff, vertical or side mount float switches
- Thermally protected 12-volt motor
- Relay operated motor power circuit
- 5 gpm capacity @ 8 foot lift
- Self priming pump, can run dry and re-prime itself automatically
- Composite pump head with Buna-N diaphragm
- All corrosion resistant components
- Compatible with Class A or Class B foam concentrates
- Quick connect inlet hose with wand
- Suction inlet strainer

Y___N___

FOAM TANK LEVEL INDICATOR

An Innovative Controls Soft-Glo foam tank level gauge for Class A foam shall be provided and installed at the pump operators panel.

The display modules are divided into four (4) distinct sections that show the volume of foam in the corresponding tank using multi-color RGB superbright LEDs. Tank level indication is enhanced by a 180° wide-angle diffusion lens in front of the LEDs. The LEDS are diffused by a proprietary method that creates an illumination effect that remains bright and visible in sunlight but eliminates the typical irritation to an operator's eyes traditionally caused by bright LEDs at night.

Y___N___

BEZEL - CHROME

A chrome bezel shall be provided for the gauge.

Y___N___

FOAM SYSTEM CONTROL

The system shall be equipped with a Class 1 UltraView SmartFOAM electric control unit installed at the pump operator panel as the single point of operation for the foam proportioning system.

The SmartFOAM Controller will show the water flow per minute, foam percentage, total water flowed, and total foam flowed on the main screen without having to press any buttons. The controller will maintain a running total of the amount of water and foam used during the current power cycle.

The SmartFOAM Controller will allow push-button modification of the foam proportioning rate from 0.1% to 10.05 in 0.1% increments. The controller will always begin operation at the preset foam proportioning rate which is configured with a password protected set-up screen. There are six (6) customizable presets for foam injection rates for a specific fire ground scenario.

The SmartFOAM Controller shall provide on-screen tutorials to assist during calibration.

Foam concentrate injection rate is controlled by a computer chip in the control unit for accurate, repeatable, reliable foam concentrate injection. A water flow sensor constantly monitors water flow through the discharge piping. The information from the flow sensor is provided to the control unit by a shielded cable. When the SmartFOAM system is activated at the control unit a signal is sent through the control cable to the motor controller to begin foam concentrate injection. The motor controller then provides power to the electric motor. The electric motor rotates the foam pump and foam concentrate flows through the foam pump discharge to the one-piece check valve/injector fitting into the water discharge stream.

The distribution box shall receive 12-Volt direct current power from the apparatus electrical system as the only source of power to operate the system and power component sensors. Control power shall be distributed to the control unit, flow meter sensor and foam concentrate feedback sensor through a conductor in the 100% electrically shielded cable sets provided by the foam proportioner manufacturer. The microprocessor in the control unit shall process input signals from the flow meter sensor and foam feedback sensor to determine the proper duty cycle for the electric motor to run. The distribution box shall provide power to the electric motor, based on signals received from the control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by the pump operator on the control unit, is injected into the water pump discharge stream. The distribution box shall have a main power control switch and over current protection for the foam proportioning system. All primary electrical wires for the foam concentrate system shall be type SXL or GXL (SAE J1128) per NFPA requirements.

Y___N___

FOAM SYSTEM OUTLETS

The foam system shall be distributed into the following discharge outlets:

Y___N___

One (1) 2.50 inch cross lay discharge.

Y___N___

Two (2) 1.50 inch speedlay discharges.

Y___N___

One (1) front jumpline discharge.

Y___N___

== CORE Pumper 22 - Body - 7.001 06/01/23 ==

Y___N___

APPARATUS BODY DESIGN AND CONSTRUCTION

The apparatus body shall be built of stainless steel and shall be designed exclusively for Fire Service use. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The body design shall be fully tested with proven engineering and test techniques such as finite element analysis, stress coating, and strain gauging. Engineering and test techniques shall have

been performed with special attention given to fatigue life and structural integrity of compartments and body support system.

The apparatus body shall be designed with the use of parametric modeling engineering software to ensure proper design of panel cuts and alignment of holes in mating parts. The entire apparatus body shall be a precision laser machined, bolted construction, properly reinforced with integral flanges eliminating the need for additional structural shapes. Hose body fabrications shall be free of all internal projections which might injure personnel or fire hose.

MODULAR BODY REQUIREMENTS

The body shall be completely modular in design allowing transfer of body components to a new chassis in the event of an accident or wear. Body components shall be removable from chassis without cutting or bending. The modular design shall also facilitate ease of repair or replacement of major or minor body parts. The mounting of the apparatus body shall be separate and distinct from the water tank mounting and the pump compartment mounting.

All body panels are to be laser machined on a CAM controlled laser to ensure accuracy (+/- .010"). This shall greatly enhance assembly and matching of repair parts. The body compartment floors, rear walls and roof areas shall be constructed of 12-gauge austenitic stainless steel. The vertical front and rear walls are designed with 14-gauge stainless steel. These front and rear walls are designed as a structural beam with the inclusion of the design encompassing a front an rear design that allows for installation of telescoping lights.

Interior and unexposed stainless steel panels shall be #4B finish to eliminate the need for high maintenance painted surfaces in the compartments. All exterior stainless steel panels shall have #4B finish.

The entire body shall be fabricated using precision holding fixtures to ensure accurate dimensions. Body front and rear vertical flanges shall be triple broken, providing a mounting area for rear hand rails. Major body components shall consist of right and left body sides, and rear facing compartments.

The front and rear vertical corners of the apparatus body shall be recessed to provide a mounting area for vertical hand rails and telescoping light poles.

COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have a bolt in 12-gauge stainless roof section for supporting roof loads of up to 500 pounds per square foot without permanent roof deformation. The stainless roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the stainless roof section.

COMPARTMENT DESIGN AND CONSTRUCTION

All compartments shall be manufactured from 12-gauge stainless steel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted together. Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall greatly enhance the strength

and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

Y___N___

BODY MOUNTING SYSTEM

The front body support system shall be an integral design with .25 inch thick steel deep section cross member across the top of the chassis frame. The deep section cross member shall be attached to the right side and the left side lower front compartment weldments with eight (8) grade 8; 3/8 inch diameter bolts on each side of the apparatus. The front cross member shall be attached to the chassis by means of an elastomer spring mounting system with limited travel.

The lower portion of this spring mounting system shall be an integral part of the pump compartment frame mounting system. This design allows for maximum chassis flexing without undue stress transfer to the apparatus body.

The right and left side rear compartments shall be attached to a stainless steel rear body support. The stainless steel support shall be attached to the chassis frame extensions by means of an elastomer spring mounting system to form a modular integral body support system.

The apparatus body shall not rest upon the chassis truck rails and must be separated entirely from the steel frame of the chassis to prevent galvanic action.

Loose fitting u-bolt body mounting systems are not acceptable due to the likeliness of the apparatus body shifting or becoming detached from the chassis upon rear end impact.

Y___N___

REAR CHASSIS FRAME EXTENSIONS

There shall be a rear chassis drop frame extension to provide frame support for the rear of the apparatus body. This extension is to be bolted to the truck chassis as an integral part of the truck frame assembly and is to include rear tow eyes, crossmember and tailboard reinforcement.

The rear chassis frame extension system shall consist of a interwoven dual .625 inch thick steel drop frame extensions with a transverse 4.00 inch x 3.00 inch x .375 inch thick structural channel, and dual laminated .188 inch thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknuts with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.50 inches shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

Y___N___

REAR TOW EYES

Two (2) tow eyes with an eye diameter of not less than 3.50 inches shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

Y___N___

REAR FRAME EXTENSION FINISH

The rear frame extension and rear floor body mounting pads shall be hot dip galvanized for corrosion resistance.

Y___N___

FASTENER FINISH

Attachment fasteners for the frame extension to the main frame rails to the main frame cross-members shall be Zinc plated to reduce the effect of harsh road chemicals.

Y___N___

20 YEAR TANK FRAME EXTENSION CORROSION WARRANTY

The galvanized parts shall have a warranty covering structural failure due to corrosion perforation. This warranty shall be in effect for 20 years after delivery of the apparatus to the end user.

Y___N___

COMPARTMENT INTERIOR FINISH

For better interior visibility, to reflect light better, ease of maintenance and prevent the masking of poor welds and questionable workmanship the interior of the body compartments shall remain uncoated.

Y___N___

STAINLESS STEEL APPARATUS BODY PAINTED

The following apparatus body components shall be painted job color.

Y___N___

The rear wheel fender panels.

Y___N___

The exterior surface of the hose bed side walls.

Y___N___

The exterior surface of the hose bed front wall.

Y___N___

EXTERIOR COMPARTMENT ROOF FINISH

The exterior top of the body compartments shall be brushed stainless steel material.

There shall be a label on each surface that shall state 'Not a Stepping Surface'.

Y___N___

COMPARTMENT VENTILATION

Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

VENT FILTRATION

There shall be filters provided for compartments L1, L3, R1 and R3. The protective louver covering the filer shall be removable to allow for filter changing.

The filter shall be 100% virgin nylon fiber in an open web design that is USDA approved. The filter shall be chemically treated with Dimethyl Benzyl Ammonium Saccharinate to aid in the reduction of bacteria and fungi.

Y___N___

BODY STRUCTURE WIDTH

The width of the apparatus body from the outside of the left compartments to the outside of the right compartments shall be 100.00 inches (2.54 m) excluding any attached peripherals such as rub rails, fenderettes, grab handles, etc.

Y___N___

COMPARTMENTATION

The following compartments shall be supplied on the apparatus:

FORWARD OF WHEEL WELL - L1

There shall be one (1) full height and full depth compartment ahead of the rear wheels on the left side of the apparatus.

It shall have approximate dimensions of 56.00 inches wide x 63.00 inches high x 24.00 inches deep.

ABOVE WHEEL WELL - L2

There shall be one (1) high side compartment centered over the rear wheels on the left side of the apparatus.

It shall have approximate dimensions of 52.00 inches wide x 33.00 inches high x 24.00 inches deep.

REAR OF WHEEL WELL - L3

There shall be one (1) full height and full depth compartment behind the rear wheels on the left side of the apparatus.

It shall have approximate dimensions of 51.00 inches wide x 63.00 inches high x 24.00 inches deep.

Due to the rear body inset above the tailboard, the interior right rear corner of the compartment shall have a notch that extends from the floor to the ceiling that is 5.50 inches wide x 12.00 inches deep. This notch shall reduce the storage capacity of the compartment with a usable width of 45.50 inches to the notch.

FORWARD OF WHEEL WELL - R1

There shall be one (1) full height and split depth compartment ahead of the rear wheels on the right side of the apparatus.

It shall have approximate dimensions of 56.00 inches wide x 33.00 inches high x 12.00 inches deep in the upper section and 30.00 inches high x 24.00 inches deep in the lower section.

ABOVE WHEEL WELL - R2

There shall be one (1) high side compartment centered over the rear wheels on the right side of the apparatus.

It shall have approximate dimensions of 52.00 inches wide x 33.00 inches high x 12.00 inches.

REAR OF WHEEL WELL - R3

There shall be one (1) full height and split depth compartment behind the rear wheels on the right side of the apparatus.

It shall have approximate dimensions of 51.00 inches wide x 33.00 inches high x 12.00 inches deep in the upper section and 30.00 inches high x 24.00 inches deep in the lower section.

Due to the rear body inset above the tailboard, the interior left rear corner of the compartment shall have a notch that extends from the floor to the ceiling that is 5.50 inches wide x 12.00 inches deep. This notch shall reduce the storage capacity of the compartment with a usable width of 45.50 inches to the notch.

Y___N___

BODY SIDE CAPACITIES

The total compartment volume capacity of the body exterior compartments shall be 198 cubic feet.

BODY LENGTH

The apparatus body module shall have an overall length of 164.00 inches, excluding rear tailboard.

Y___N___

SIDE COMPARTMENT DOOR CONSTRUCTION

All horizontal and vertical side compartment doors shall be non-locking roll-up style doors.

Y___N___

R·O·M ROLL-UP DOOR

A R•O•M Corporation Series IV roll-up shutter doors shall be installed for each body compartment specified with a roll-up door. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats shall feature a double wall extrusion 0.315 inches thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slats must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design shall be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double “V” seal to prevent water and debris from entering compartment. Bottom rail lift bar

shall be a one piece “D” shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125 inches. Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counterbalance system. Counterbalance system shall be 4.00 inches in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counterbalance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counterbalance system.

Y___N___

SIDE COMPARTMENT DOOR PAINT FINISH

The side compartment roll-up doors shall be a painted finish with body job color.

Y___N___

ROLL-UP DOOR TRACK & TRIM - PAINT FINISH

The track and trim for each roll-up door specified shall be painted finish to match the door shutters.

Y___N___

DOOR OPEN INDICATOR

Each roll-up door shall have an integral door open indicator magnet in the lift bar.

If the door is not properly closed and the parking brake is released, it shall activate the “hazard light” in the cab to alert the crew.

Y___N___

REAR CENTER COMPARTMENT

There shall be one (1) full height compartment, RR1, located at the rear of the apparatus below the hosebed access area.

It shall have approximate dimensions of 48.00 inches wide x 62.00 inches high x 22.00 inches deep.

Y___N___

REAR CENTER COMPARTMENT CAPACITY

The total compartment volume capacity of the body exterior rear center compartment (RR1) shall be 38.5 cubic feet.

Y___N___

REAR CENTER COMPARTMENT DOOR CONSTRUCTION

The rear center compartment door shall be non-locking roll-up style door.

Y___N___

REAR COMPARTMENT DOOR SATIN ANODIZED FINISH

The rear compartment roll-up door shall be satin anodized finish.

Y___N___

DOOR OPEN INDICATOR

The rear roll-up door shall have an integral door open indicator magnet in the lift bar.

If the door is not properly closed and the parking brake is released, it shall activate the “hazard light” in the cab to alert the crew.

Y___N___

REAR BODY DIAMOND GRADE CHEVRON STRIPING

A minimum of 50 percent of the rear-facing vertical surface, visible from the rear of the apparatus, shall be equipped with diamond grade retro-reflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees.

The stripe shall be 6.00 inches (152.40 mm) wide alternating in colors.

Y___N___

REFLECTIVE STRIPE COLOR

Each stripe in the chevron shall be a single color alternating between red (3M #983-72) and fluorescent green (3M # 983-23).

Y___N___

RR2 - LADDER STORAGE - ON BEAM

There shall be a ladder storage compartment provided at the rear of the apparatus on the right side of the body beside the water tank.

The ladders shall be placed into the body from the rear of the apparatus sliding into the compartment on beam. The compartment shall have approximate dimensions of 30.00 inches high x 12.00 inches wide.

This compartment shall extend from the rear of the apparatus completely through to allow the ladders to extend into the pump house for storage.

The ladder compartment shall be constructed of 12 gauge stainless steel material.

The compartment shall have storage for one (1) 24 foot two-section ladder, one (1) 14 foot roof ladder, one (1) 10 foot folding ladder, and three (3) pike poles.

Y___N___

LADDER COMPARTMENT DOOR

A vertically hinged door shall be provided to access the rear ladder storage compartment.

The door material shall match the rear overlay material and shall include chevron material matching the rear of the apparatus.

If the door is not properly closed and the parking brake is released, it shall activate the “hazard light” in the cab to alert the crew.

Y___N___

REAR COMPARTMENT DOOR LATCH

The door handle shall be a polished stainless steel non-locking "D"-ring latch with a 5-degree bend for easier grasping with a gloved hand.

It shall be installed centered on the door.

Y___N___

LADDER COMPLEMENT

The following ladders shall be supplied with the apparatus:

Y___N___

One (1) Duo-Safety 10 foot (3.0 m) aluminum attic ladder(s), model 585A.

Y___N___

One (1) Duo-Safety 14 foot (4.0 m) aluminum roof ladder(s) with folding hooks, model 775-A.

Y___N___

One (1) Duo-Safety 24 foot (7.0 m) two (2) section solid beam aluminum extension ladder(s), model 900A.

Y___N___

PIKE POLES

All NFPA required pike poles will be supplied and installed by the Fire Department before the truck is placed into service.

Y___N___

INSET REAR TAILBOARD

The rear of the apparatus body shall be inset in design with the rearmost body side compartmentation extended rearward to provide a larger door opening and increase compartment storage space.

The rear tailboard shall be fabricated of the same tubular materials as used in the apparatus body.

The tailboard shall be an independent assembly and shall be bolted to the rear body structural framing to provide body protection and a solid rear stepping platform.

The tailboard shall provide protection for the side body compartments and shall provide mounting for the rear ICC marker lights.

On the rear body surface, a sign shall be attached that states: "DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT"

The rear tailboard and body shall be constructed such that the angle of departure shall be no less than 8 degrees at the rear of the apparatus when fully loaded (NFPA) 1901, Standard for Automotive Fire Apparatus.

Y___N___

REAR TAILBOARD LENGTH

The inset area of the tailboard shall be approximately 12.00 inches (305 mm) deep. The step shall be fabricated from "Laser Grip" stainless steel meeting (NFPA) 1901 step requirements.

Y___N___

REAR TAILBOARD - BRIGHT FINISH

The rear tailboard shall have a bright finish.

Y___N___

REAR WHEEL PANEL FENDER SIDE SKIRTS

There shall be stainless steel fender side skirts located in the area of the rear wheels of the body.

Y___N___

WHEEL WELL LINERS

The apparatus body wheel well liners shall be made from 16 gauge stainless steel and shall be rolled, die stamped and fully removable for access to suspension assembly.

The liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.

Y___N___

FENDERETTES

Two (2) polished stainless steel fenderettes shall be provided and installed on the body rear wheel well panels, one (1) each side.

Y___N___

REAR AXLE MUD FLAPS

There shall be two (2) black, anti-sail mud flaps provided and installed behind the rear wheels.

Y___N___

SCBA BOTTLE COMPARTMENTS

There shall be seven (7) SCBA bottle tube compartments provided and installed, three (3) in the left side rear wheel well area and four (4) in the right side wheel well area.

Each compartment shall be constructed of gray roto molded storage compartment to provide SCBA scuff protection. A door seal shall be provided at the perimeter of the SCBA compartment.

The doors shall be stainless steel with a stainless finger latch.

Y___N___

FUEL FILL - LEFT SIDE BODY

The fuel fill shall be located in the rear fender area on the left side of the apparatus body.

The spring loaded fuel fill door shall have "Diesel Fuel" laser cut in the face of the door. There shall be a vent line from the fuel tank to beneath the fuel cap to aid in fueling of the truck.

Y___N___

FUEL FILL AND SCBA DOORS - BRIGHT FINISH

The fuel fill and SCBA doors shall have a bright finish.

Y___N___

SCBA BOTTLE RETENTION STRAP

There shall be one (1) 1.00-inch wide loop of red webbing installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in the event the door is not latched for travel. The loop shall be mounted, centered in the compartment and shall hang within 1.00-inch of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

Y___N___

TANK CAPACITY

The water tank shall be 1000 gallons (3785 liters) in capacity.

Y___N___

WATER TANK CONSTRUCTION

The tank shall be constructed of .50 inch thick Polypropylene & Mac226 sheet stock. This material shall be non-corrosive stress relieved thermoplastic, black in color and UV stabilized for maximum protection. The tank shall be of a special configuration and is so designed to be completely independent of the body and compartments. All exterior tank joints and seems shall be extrusion welded and/or contain the Bent Edge™ and tested for maximum strength and integrity. The top of the tank is fitted with removable lifting eyes designed with a 3-to-1 safety factor to facilitate easy removal.

The transverse and longitudinal swash partitions shall be manufactured of Polypropylene & Mac226 material. 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 and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

Y___N___

TANK WARRANTY

A lifetime tank warranty will be provided by the tank manufacturer, United Plastic Fabricating (UPF).

Y___N___

TANK MOUNTING

A tank mounting cradle shall be provided. The tank mounting cradle shall consist of a minimum of seven (7) crossmembers and two (2) full tank length longitudinal members.

The water tank shall rest on the tank mounting subframe, and shall be insulated from the sub-frame with a 2.50 inch wide rubber insulator. The water tank shall sit cradle-mounted using four (4) corner angles of 8.00 inch x 8.00 inch x 4.00 inch x .25 inch welded directly to the tank sub-frame. The angles shall keep the tank from shifting left to right or front to rear.

The water tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The water tank shall be completely removable without disturbing or dismantling the apparatus body structure.

The hosebed cross-braces shall act as water tank retainers. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body. No exception will be permitted to the tank mounting requirements.

Y___N___

TANK CRADLE FINISH

The tank cradle shall be finish painted to match the chassis axles.

Y___N___

TANK LID & FILL TOWER

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of .50 inch thick Polypropylene & Mac226 and shall be a minimum dimension of 10.00 inch x 14.00 inch outer perimeter. The tower shall have a .25 inch thick removable Polypropylene & Mac226; screen and a Polypropylene & Mac226 hinged-type cover. Inside the fill tower, there shall be a

combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum ID of 4.00 inches that is designed to run through the tank, and shall be piped behind the rear axle beneath the tank.

The tank cover shall be constructed of recessed .50 inch thick Polypropylene & Mac226, stress relieved, UV stabilized material. A minimum of two (2) lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4.00 inch ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4,00 inch coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

Y___N___

FILL TOWER LOCATION

The fill tower shall be located at the front of the hose bed, toward the center location side to side.

Y___N___

SUMP

There shall be a single sump provided with the water tank.

The sump shall be constructed of white Polypropylene & Mac226 and be located in the left front corner of the tank, unless specified otherwise. On all tanks that require a front suction, a schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. All tanks shall have an anti-swirl plate located above the dip tube.

Y___N___

SUMP PLUG

The sump shall have a 3.00 inch (77.00 mm) plug for use in draining and cleaning out the tank.

Y___N___

OUTLETS

In addition to the tank suction valve outlet located in the sump, there shall be an outlet provided for the tank fill valve. If there are any additional options selected (such as an extra tank suction or direct tank inlets), there shall be additional outlets provided to accommodate these items.

PASS-THRUS

If there are any options selected (such as rear discharges or ladder storage), there shall be pass-thru sleeves and notches provided into the tank design to accommodate these items.

Y___N___

BODY HOSEBED

A hosebed shall be provided with the minimum capacity as required by (NFPA) 1901, Standard for Automotive Fire apparatus.

The hosebed and walls shall be manufactured from stainless steel and shall be constructed in such a manner that will prevent damage to fire hose. The interior of the hosebed shall be free of

projections such as nuts, sharp edges or brackets that may damage hose. No exceptions to this requirement are allowed.

An aluminum extrusion shall be installed over the rear opening of the hosebed to protect the body and hose from wear when loading and unloading hose. The hosebed floor shall be fitted with removable slatted, ribbed 6.00 inch heavy-duty extruded aluminum floorboards.

Y___N___

HOSEBED BULKHEAD

A stainless steel bulkhead shall be installed between the front of the body and the hose storage area of the hosebed creating a hosebed dunnage storage area.

The bulkhead shall be the same height and design as the hosebed side walls.

No hosebed flooring shall be provided in the space between the bulkhead and the front wall of the hosebed.

Y___N___

HOSE BED FLOODLIGHT

There shall be one (1) Maxxima MWL-36, 2100 Lumen LED hose bed floodlight with swivel and folding handle provided and installed at the front right corner of the hosebed.

There shall be a weather resistant switch on the light head.

Y___N___

HOSE BED LIGHT ACTIVATION

The hose bed light shall be activated when the park brake is set.

Y___N___

HOSEBED RISER HEIGHT

The height of the hosebed risers shall be approximately 21.75 inches (552 mm) measured from the top of the high side compartments to the top of the body side walls.

Y___N___

ADJUSTABLE HOSEBED DIVIDERS

Two (2) adjustable hosebed dividers shall be provided and installed. Each divider shall be fabricated from .25 inch thick smooth aluminum plate, 5052-H32 alloy.

The rear end of each divider shall have a 3.00 inch radius corner and shall be sanded and deburred to prevent damage to hose.

There shall be two (2) hand hold openings provided. One (1) at the rear in a vertical position and one (1) approximately 24.00 inches in from the rear in a horizontal position at the top of the divider.

Y___N___

HOSE LOAD

The hosebed shall accommodate the following hose loads:

Y___N___

HOSEBED COVER

A vinyl hosebed cover shall be provided and installed that is designed to cover the entire main hosebed area. The cover shall be installed with "stretch cord type" fasteners along each side of the hosebed.

A weighted flap shall be incorporated into the rear edge of the cover.

The hosebed cover rear flap shall also include a positive locking device to meet the requirements of (NFPA) 1901.

Y___N___

HOSEBED VINYL COLOR

The vinyl color shall be Midnight Black.

Y___N___

SUCTION HOSE STORAGE

Suction hose shall be stored on a formed aluminum tray. The tray shall employ a design without fasteners or clamps to hold the suction hose in place in the tray.

Two (2) trays shall be mounted vertically in the hosebed of the apparatus on a mounting system on the hosebed inside right wall.

Y___N___

HARD SUCTION TRAY FINISH

The hard suction trays shall have a gray powder coated finish.

Y___N___

SUCTION HOSE

The following suction hose shall be provided with the carrier.

Y___N___

There shall be two (2) 10 foot length(s) of 6.00 inch lightweight PVC flexible suction hose(s) with long handle female end and rocker lug male end couplings provided with the above specified storage.

Y___N___

STRAINERS

The suction hose strainer(s) will be supplied and installed by the Fire Department before the truck is placed into service.

Y___N___

BODY RUB RAIL / LIGHTING SYSTEM

The apparatus body shall have bolt on extruded aluminum rub rails affixed to the side beneath each compartment door fore and aft of the rear wheel well panel.

Each rub rail shall be attached to the apparatus body with stand off spacers made from 1.00 inch diameter UHMW Polyethylene bar stock.

The rub rails shall be designed with integral white and red LED strip lights. The white light shall be downward facing for ground lighting and the red light shall be outward facing for additional warning lighting.

The white light shall be activated with the chassis ground lighting and the red lights shall activate as a red flashing warning light when the warning lights are active.

Y___N___

RUB RAILS - BRIGHT FINISH

The rub rails shall have a bright finish.

Y___N___

BODY COMPARTMENT LIGHTING

Two (2) White/Red LED, armor protected, strip lights shall be provided and installed, one (1) each side of the compartment, at the door frame for each body compartment.

Each body door shall have an automatic compartment light switch.

There shall be a white/red color selector switch in the cab that controls the color of this lighting.

Y___N___

FOLDING STEPS

Innovative Control folding steps made of high strength die cast aluminum with integrated LED illumination and conforming to current (NFPA) 1901 step requirements shall be provided and installed on the apparatus as specified.

The steps shall be mounted with no more than 18.00 inches between each approved step area.

Y___N___

FOLDING STEP LIGHT ACTIVATION

The folding step lighting shall be activated when the park brake is set.

Y___N___

FOLDING STEPS - BRIGHT FINISH

The folding step(s) shall have a bright finish.

Y___N___

STEP LOCATION

Three (3) folding steps shall be installed on the left forward vertical wall of the front compartment.

Y___N___

STEP LOCATION

Three (3) folding steps shall be installed on the right forward vertical wall of the front compartment.

Y___N___

INTERMEDIATE REAR FIXED STEPS - LOWER AND MID

There shall be four (4) rear corner intermediate fixed steps, two (2) each side, provided and installed adjacent to the rear compartment. The steps shall be positioned in the lower and mid positions above the rear tailboard.

The steps shall be no less than 8.00 inches in depth and fabricated of "Laser Grip" stainless steel to meet (NFPA) 1901 step requirements.

Y___N___

REAR INTERMEDIATE STEP - BRIGHT FINISH

The rear intermediate step(s) shall have a bright finish.

Y___N___

REAR INTERMEDIATE STEP LIGHTING

There shall be an LED strip light with integral guard provided and installed with each fixed step at the rear of the apparatus to provide lighting to the lower and mid position steps.

Y___N___

STEP LIGHT ACTIVATION

The step light shall be activated when the park brake is set.

Y___N___

ZICO QUIC-LADDER

A Zico model #RL QUIC-LADDER shall be installed on the apparatus as specified. The ladder shall provide access to the top of the apparatus.

The ladder handrails shall be constructed of 1.25 inch (3.1mm) heavy walled aluminum tubing covered in a black, rough-grip powder coat.

The bottom two (2) rungs of the ladder shall fold out and down to the ground for ease of access. The ladder rungs shall be constructed of cast aluminum with a non-skid surface to provide traction and safety.

The upper section shall be permanently secured to the body with a locking mechanism toward the lower section that allows the ladder to extend down and out to the ground from the apparatus body when released. Allowing the ladder to be parallel to the body when in a stowed position. The ladder shall automatically latch. When deployed, the fold-down steps shall create a safe and comfortable climbing angle.

The number of rungs will be configured accordingly to the rear apparatus layout.

If the step is not properly stowed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew.

Y___N___

ACCESS LADDER LOCATION

The ladder shall be installed at the rear of the apparatus on the left side.

Y___N___

REAR HANDRAILS

Two (2) extruded aluminum handrails shall be supplied and installed at the rear of the apparatus body.

There shall be one (1) 24.00 inch long vertical handrail installed, on the right side at the rear area of the body inset or on the flat back pending configuration and one (1) 69.00 inch long handrail installed horizontally below the hosebed.

Y___N___

HANDRAILS - BRIGHT FINISH

The handrails shall have a bright finish with chrome finish stanchions.

Y___N___

LIGHTING - REAR HORIZONTAL HANDRAIL

The horizontal handrail adjacent to the hosebed shall contain integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the hosebed.

Y___N___

LIGHTING - ACTIVATION

The handrail lighting shall be activated with the ground lighting.

Y___N___

COMPARTMENT FLOOR MATTING

The floor of each compartment shall be covered with Dri-Dek floor tiles that do not have a floor mount tray installed. The tile shall be custom fitted to the interior compartment floor construction to protect the entire floor surface from equipment damage and for improved ventilation.

Y___N___

FLOOR MATTING COLOR

The floor matting shall be black in color.

Y___N___

FULL DEPTH ALUMINUM SHELVING - ADJUSTABLE

The full depth shelving shall be made out of .190 inch smooth aluminum sheet material and shall have a flange 1.50 inches deep.

Each shelf shall be adjustable in height and held in place by extruded uprights.

There shall be a total quantity of four (4) provided:

Y___N___

SHELF MATTING

Any shelf provided shall have Dri-Dek matting installed for improved ventilation that shall also provide a non-slip surface.

Y___N___

MATTING COLOR

The matting shall be black in color.

Y___N___

FLOOR MOUNT ALUMINUM TRAYS - PULL-OUT

Each floor mount pull-out tray shall be made out of .190 inch smooth aluminum sheet material with four (4) side flanges.

The floor mounted tray shall be secured to Grant slides and a gas shock mechanism to hold the tray in both the in and out positions with a 250# capacity.

There shall be a total quantity of three (3) provided:

Y___N___

SHELF MATTING

Any pull-out tray provided shall have Dri-Dek matting installed for improved ventilation that shall also provide a non-slip surface.

Y___N___

MATTING COLOR

The matting shall be black in color.

Y___N___

HEAVY DUTY FLOOR MOUNT ALUMINUM TRAYS - PULL-OUT

Each floor mount pull-out tray shall be made out of .190 inch smooth aluminum sheet material with four (4) side flanges.

The floor mounted tray shall be secured to Grant slides and a gas shock mechanism to hold the tray in both the in and out positions with a 500# capacity.

There shall be a total quantity of one (1) provided:

Y___N___

-One (1) located in the R1 compartment.

Y___N___

SHELF MATTING

Any pull-out tray provided shall have Dri-Dek matting installed for improved ventilation that shall also provide a non-slip surface.

Y___N___

MATTING COLOR

The matting shall be black in color.

Y___N___

FLOOR MOUNT ALUMINUM TRAYS - PULL-OUT

Each floor mount pull-out tray shall be made out of .190 inch smooth aluminum sheet material with four (4) side flanges.

The floor mounted tray shall be secured to Grant slides and a gas shock mechanism to hold the tray in both the in and out positions with a 250# capacity.

There shall be a total quantity of two (2) provided:

Y___N___

FULL HEIGHT PULL OUT VERTICAL TOOL BOARD - ALUMINUM

A full height aluminum pull-out vertical tool board shall be installed in the compartment as specified.

The tool board shall be made from .25 inch aluminum and attached at the floor and ceiling of the compartment with slide assemblies and a locking device at the bottom to hold the board in both the stored and extended position.

Each tool board may be fully adjustable across the width of the compartment dependent on the layout of the compartment.

There shall be a total quantity of two (2).

Y___N___

== CORE Pumper 22 - Electrical - 7.001 06/01/23 ==

Y___N___

APPARATUS BODY ELECTRICAL SYSTEM

All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-Volt negative ground system.

All 12-Volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-Volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect.

The apparatus shall be equipped with a Class1 Es-Key Management System for complete control of the electrical system devices.

The right rear compartment shall house Power Distribution Module (PDM). The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service.

All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

Y___N___

APPARATUS ICC MARKER LIGHTING

Two (2) amber Whelen OS Series LED side clearance lights shall be provided and installed, one (1) each side, ahead of the forward body compartment.

Five (5) red LED clearance lights shall be provided and installed at the rear of the apparatus.

Two (2) red LED clearance lights shall be provided and installed, one (1) each side, facing the sides of the apparatus.

A red diamond shaped reflector shall be mounted on each lower rear corner of the apparatus body.

An amber diamond shaped reflector shall be mounted on each lower front corner of the apparatus body.

ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

Y___N___

MARKER LIGHTING - BRIGHT FINISH

The ICC lights are to be mounted in a chrome flange.

Y___N___

SIDE MOUNTED TURN SIGNAL LIGHTS

There shall be two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights provided and installed, one (1) each side, in the rear wheel well area.

Y___N___

TURN SIGNAL HOUSING - BRIGHT FINISH

The turn signals shall be mounted in a chrome bezel.

Y___N___

UPPER LIGHTING PACKAGE

The following NFPA lighting package, manufactured by Whelen, shall be supplied and installed in the upper areas of the vehicle.

Y___N___

UPPER ZONE A - ROOF MOUNTED LIGHTBAR

There shall be a Whelen Freedom model F4N7VLED, 72.00 inch lightbar provided and installed on the cab roof, as far forward as possible.

This lightbar system shall be supplied with sixteen (16) LED modules, ten (10) red linear LEDs and six (6) white linear LEDs. The outer lenses shall be clear.

Any white lights in the lightbar shall be disabled automatically for the “Blocking Right of Way” mode.

Y___N___

UPPER ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen Super-LED warning lights, model R416*F LED Rota-Beam beacons, provided and installed.

One (1) each side at the rear of the apparatus, one (1) on each side.

Y___N___

BEACON LIGHTS COLOR

The upper rear beacon lights shall be red with red lenses.

Y___N___

POLISHED STAINLESS STEEL LIGHT STANCHIONS

Two (2) light stanchions shall be mounted in the upper rear corners of the body sides, one (1) each side.

Each light stanchion shall be made of polished stainless steel and shall be large enough to accommodate the Upper Zone C beacon specified.

Y___N___

LOWER LIGHTING PACKAGE

The following NFPA lighting package, manufactured by Whelen, shall be supplied and installed in the lower areas of the vehicle.

Y___N___

LOWER ZONE A - FRONT WARNING LIGHTS

There shall be four (4) Whelen 600 Series Super-LED light heads with bezels, two (2) on each side, at the front of the chassis in a separate housing than the headlights.

Y___N___

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

Y___N___

BRIGHT FINISH BEZEL

The warning lights shall have a chrome bezel.

Y___N___

LOWER ZONE B & D- SIDE WARNING LIGHTS

There shall be two (2) Whelen 600 Series Super-LED light heads with bezels, one (1) on each side, provided and installed on the sides of the cab.

Y___N___

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

Y___N___

BRIGHT FINISH BEZEL

The warning lights shall have a chrome bezel.

Y___N___

CAB SIDE WARNING LIGHTS LOCATION

The warning lights on the sides of the cab shall be mounted at the chassis side bumper location.

Y___N___

LOWER ZONE B & D- SIDE WARNING LIGHTS

There shall be two (2) Whelen 600 Series Super-LED light heads with bezels, one (1) on each side, provided and installed on the sides of the body.

Y___N___

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

Y___N___

BRIGHT FINISH BEZEL

The warning lights shall have a chrome bezel.

Y___N___

BODY SIDE WARNING LIGHTS LOCATION

The warning lights on the sides of the body shall be mounted on the body over the rear wheels.

Y___N___

LOWER ZONE C- REAR WARNING LIGHTS

There shall be two (2) Whelen 600 Series Super-LED light heads with bezels, one (1) on each side, provided and installed on the rear of the apparatus.

Y___N___

REAR STOP/TAIL/TURN/BACKUP LED LIGHTS

There shall be Whelen model 600 series, 4x6, LED rear taillight assemblies provided and installed with the apparatus, one (1) each side at the rear.

The following shall be provided and installed in the order as specified from top to bottom:

One (1) red stop/tail light
One (1) amber turn signal light populated in the shape of an arrow
One (1) white back up light

Y___N___

MOUNTING ASSEMBLY

There shall be Whelen 4-position vertical chrome plated housing provided for each taillight assembly.

The lower most open cavity shall be filled with the specified warning light for the rear of the apparatus.

Y___N___

REAR TAILLIGHTS COLOR

The taillights mounted at the rear shall have clear lenses.

Y___N___

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

Y___N___

SIDE SCENE LIGHT LOCATION

There shall be four (4) scene lights installed on the sides of the apparatus, two (2) on each side.

One (1) located at the front and one (1) located at the rear corner.

Y___N___

SCENE LIGHT MODEL

Whelen 900 Series Super LED gradient scene lighting with flange shall be provided and surface mounted on the apparatus at the locations specified.

Y___N___

LIGHT BEZEL FINISH

Each light shall be installed with a chrome plated bezel.

Y___N___

SCENE LIGHT ACTIVATION

The body side scene lighting shall be activated simultaneously by one (1) smart switch installed in the driver's side switch panel in the cab.

Y___N___

SCENE LIGHT ACTIVATION

The body side scene lighting shall be activated simultaneously by one (1) smart switch installed in the pump operator's panel switch panel.

Y___N___

REAR SCENE LIGHT LOCATION

There shall be two (2) scene lights installed on the rear facing vertical surface of the apparatus, one (1) on each side.

Y___N___

SCENE LIGHT MODEL

Whelen 900 Series Super LED gradient scene lighting shall be provided and surface mounted on the apparatus at the locations specified.

Y___N___

SCENE LIGHT ACTIVATION

The rear scene lighting shall be activated simultaneously by one (1) smart switch installed in the driver's side switch panel in the cab.

Y___N___

SCENE LIGHT ACTIVATION

The rear scene lighting shall be activated simultaneously by one (1) smart switch installed in the pump operator's panel switch panel.

Y___N___

FRONT SCENE LIGHT LOCATION

There shall be one (1) brow light mounted center on the front brow of the cab.

Y___N___

SCENE LIGHT MODEL

HiViz LED brow light model FT-B-72 lamphead shall be provided and installed.

Each lamphead shall have fifty-seven (57) Cree XP-G2 white LEDs, none (9) for a center spot light beam pattern, eighteen (18) for flood lighting, and thirty (30) for scene lighting.

The lamphead shall be no more than 2.063 inches high by 72.00 inches wide by 2.50 inches deep.

Y___N___

LIGHT HOUSING

Each lamphead shall be powder coated with a black finish.

Y___N___

SCENE LIGHT ACTIVATION

The cab forward brow lighting shall be activated by three (3) switches in the driver's area of the cab to control the brow light.

The switches shall be wired and labeled as follows according to these functions:

- Brow Spot
- Brow Flood
- Brow Scene

Ignition power shall be used to power each of the brow light switches. These lights shall be independent and not be interfaced with the warning light system and parking brake interface.

Y___N___

CAB SIDE SCENE LIGHT LOCATION

There shall be two (2) scene lights installed on the side of the cab of the apparatus, one (1) on each side.

Y___N___

SCENE LIGHT MODEL

Whelen 900 Series Super LED gradient scene lighting with flange shall be provided and surface mounted on the apparatus at the locations specified.

Y___N___

LIGHT BEZEL FINISH

Each light shall be installed with a chrome plated bezel.

Y___N___

SCENE LIGHT ACTIVATION

The cab side scene lighting shall be activated simultaneously by one (1) smart switch installed in the driver's side switch panel in the cab.

Y___N___

SCENE LIGHT ACTIVATION

The cab side scene lighting shall be activated simultaneously by one (1) smart switch installed in the pump operator’s panel switch panel.

Y___N___

TELESCOPING SCENE LIGHT LOCATION

There shall be two (2) telescoping side mount lights installed on the front corners of the body, one (1) each side.

Y___N___

SCENE LIGHT MODEL

Fire Research Spectra LED model SPA100-Q20 lamphead shall be provided and installed for the specified side mount, bottom raise telescoping scene light(s).

Each lamphead shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12 Volts DC, draw 18 amps, and generate 20,000 lumens of light.

Each lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 5.875 inches high x 14.00 inches wide x 3.50 inches deep and shall have a heat resistant handle. The lamphead and mounting arm shall be powder coated.

Y___N___

TELESCOPING POLE

Each lighthead shall be mounted to a side mount push up telescopic pole. 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 3.50 inch offset. Wiring shall extend from the pole bottom with a 4.00 foot' retractile cord.

The scene light pole shall be equipped with an "up" indicator switch. When the parking brake is released, it shall activate a flashing hazard light in the cab to warn the crew if the light is in the raised position.

Y___N___

LAMPHEAD SWITCH

Fire Research -ON option switch shall be installed on the lamphead. The weatherproof on-off toggle switch shall be mounted on the lamphead.

Y___N___

INVERTER

A Xantrex 3000W - 120V inverter shall be provided and installed in the L1 compartment.

- **Power Inverter / Charger**
- All-In-One functionality
- 3000W
- - 50A Transfer Switch
- Multi-Stage Charging
- High Efficiency
- 2X Surge
- Compact & Lightweight Design
- Input: 12 VDC
- Output: 120 VAC
- **Watts: 3000W**
- Ignition Control
- Programmable AC Under-Voltage Shutdown
- Battery Output Current: 5 - 50A
- Battery Equalization
- Maximizes Flooded Battery Life
- Built in 50A AC Transfer Relay
- Dead Battery Charging Down To 0 VDC
- Power Share
- Prioritizes AC Loads

The Xantrex Freedom XC Pro 3000 Inverter-Charger has many exciting features for users of all types. It's one of FactoryOutletStore's best selling Freedom XC True Sine. You can extend the lifetime of your Xantrex Freedom XC Pro 3000 Inverter-Charger with the purchase of a FactoryOutletStore Factory Protection Plan. FactoryOutletStore stocks a full line of accessories like Xantrex Freedom X GFCI Option, Xantrex Freedom X-XC Remote Panel, and Xantrex

Freedom Xand XC Remote Panel for the Xantrex Freedom XC Pro 3000 Inverter-Charger. The Xantrex Freedom XC Pro 3000 Inverter-Charger is sold as a Brand New Unopened Item.

Y___N___

LOAD CENTER PANEL

A Square D Homeline circuit breaker panel shall be provided in the apparatus body. All breakers shall be properly labeled. The inverter shall be hard wired to the circuit breaker panel. The circuit breaker panel shall be mounted so as to not interfere with shelves or trays, if specified. The load center panel cover shall be accessible with hand tools.

Y___N___

SHORELINE / INVERTER TRANSFER SWITCH

A shoreline/inverter transfer switch shall be provided to automatically switch the cab 120-volt AC loads from shoreline power to inverter power by starting the onboard inverter. The transfer switch is rated at 120-volt AC 30 amps.

Y___N___

120 VAC RECEPTACLES

Two (2) 120-volt AC receptacles shall be provided with the apparatus.

The receptacles shall be located in the upper rear of the L1 and R1 compartments and shall be mounted in a weather proof box with a self closing weatherproof cover. The outlets shall be wired to the inverter.

The electrical outlets shall be a NEMA 5-15, rated at 120-volt AC, 15-amp, duplex straight blade receptacle.

Y___N___

== CORE Pumper - Extras - 7.001 06/01/23 ==

Y___N___

REFLECTIVE SAFETY STRIPE

There shall be a 6.00 inch wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle.

The striping shall be placed up to 60.00 inches above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

Y___N___

STRIPE PATTERN

The stripe on each side of the apparatus shall run straight back from the cab to the body, then angle up at approximately a 45 degree angle on the front body door and then run straight back from there to the rear of the body.

Y___N___

LETTERING & EMBLEMS

The apparatus lettering and emblems shall be provided and installed by the Fire Department after final delivery of the completed apparatus.

Y___N___

LICENSE PLATE MOUNTING

One (1) license plate mounting bracket and LED light shall be provided and installed at the rear of the apparatus.

Y___N___

WHEEL CHOCKS

One (1) set of NFPA compliant Worden wheel chocks model # HWGY shall be supplied with the apparatus.

The wheel chocks measure 7.75 inches high x 8.50 inches wide x 15.00 inches long and shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance.

Y___N___

WHEEL CHOCKS

One (1) set wheel chock holders shall be provided and installed on the left side of the apparatus below the front body compartment.

Y___N___

MISCELLANEOUS EQUIPMENT

The following loose equipment as outlined in (NFPA) 1901 sections 5.9.3 and 5.9.4 shall be provided by the Fire Department:

- Supply Hose
- Nozzles
- Axes
- Rechargeable (Portable) Flashlights
- Fire Extinguishers
- SCBA(s) For Each Assigned Seating Position
- SCBA Cylinders
- First Aid Kit
- AED
- Spanner Wrenches
- Adapters
- Handheld Tools
- Salvage Covers
- Traffic Vests
- Traffic Cones
- Flares