

THE CITY OF WHEELING

Office of the City Manager
 1500 CHAPLINE STREET
 CITY COUNTY BUILDING, WHEELING, W. VA. 26003
 304-234-3617



SOLICITATION OF BID

DATE **10/01/18**

TO: _____

TO: _____

TO: _____

- QUOTE LOWEST AND BEST PRICE, F.O.B. DESTINATION POINT.
- STATE DELIVERY DATE AND TERMS.
- INDICATE LENGTH OF TIME OFFER REMAINS OPEN (30 OR MORE DAYS PREFERRED).
- YOUR BID MUST BE RECEIVED NOT LATER THAN 2:00 P.M. ON Thursday, October 25, 2018
- SEE ATTACHED NOTICE TO PROSPECTIVE BIDDERS.

Quantity	Unit	Description	The Prices quoted herein are the lowest net prices	Unit Price	Amount
1	each	The City of Wheeling is seeking bids for: 1750 GPM PUMPER as per the enclosed specifications. Questions please contact LARRY HELMS at (304) 234-3776.			

IMPORTANT - THIS IS NOT AN ORDER

THIS SOLICITATION IMPLIES NO OBLIGATION ON THE PART OF THE CITY. THE CITY RESERVES THE RIGHT TO ACCEPT ANY PART OR ALL OF YOUR BID AT THE PRICES QUOTED. IF SUBSTITUTIONS ARE OFFERED, MAKE FULL EXPLANATION. THE CITY RESERVES THE RIGHT TO REJECT ALL BIDS.

THIS BID CONSTITUTES A FIRM OFFER AND SHALL
 REMAIN FIRM UNTIL _____, 20_____.

By: _____
 (Must be signed separately)

 Company submitting bid

By: _____
 Title

 Date of Bid

NOTICE TO PROSPECTIVE BIDDERS

The City of Wheeling is soliciting bids for the item or items described on the attached specifications. Sealed bids will be received in the City Manager's office until the time stated, at which time all bids will be publicly opened and read aloud. The City Manager will then determine which bid best serves the interests of the City, taking into consideration the quality of the articles or services to be supplied, conformity with specifications, price, delivery terms, and the service reputation of the vendor. In the case of a contract or order in excess of \$15,000, the determination by the City Manager must then be ratified by City Council, and upon such ratification, the successful bidder will be notified that his bid has been accepted and that he is to perform his contract within the time and in the manner stated in the bid. Payment will be made upon invoice after delivery and a reasonable period for inspection and testing.

All bids must be made on the enclosed SOLICITATION OF BID form and submitted in the colored envelope, which envelope must be sealed. Bids shall be considered offers, and their effective date shall be the date of the bid opening. A bid may be considered unresponsive if it does not state delivery date and terms, if it is not signed, or if it does not indicate the length of time the offer remains open. The statement as to the open offer must be separately signed. The City expects that bidders shall leave their offers open for at least 30 days.

Notice of acceptance will be in the form of the City's standard Purchase Order, which form will be sent to the successful bidder and which will make reference to the bid form previously submitted.

The City reserves the right to reject any and all bids.

CITY OF WHEELING



CITY COUNTY BLDG., 1500 CHAPLINE STREET
WHEELING, WV 26003

NOTICE TO PROSPECTIVE BIDDERS

The City of Wheeling is soliciting sealed, competitive bids for ONE (1) 1750 GPM PUMPER.

Sealed bids will be received in the City Manager's office, Room 302, City-County Building, until 2:00 p.m. on Thursday, October 25, 2018, at which time all bids will be publicly opened and read aloud. The City Manager will then determine which bid best serves the interests of the City, taking into consideration the quality of the articles or services to be supplied, conformity with specifications, price, delivery terms, and the service reputation of the vendor. In the case of a contract or order in excess of \$15,000, the determination by the City Manager must then be ratified by City Council, and upon such ratification, the successful bidder will be notified that his bid has been accepted and that he is to perform his contract within the time and in the manner stated in the bid. Payment will be made upon invoice after delivery and a reasonable period for inspection and testing.

A copy of the specifications is available in Room 305, City-County Building. Bids shall be considered offers, and their effective date shall be the date of the bid opening. A bid may be considered unresponsive if it does not state delivery date and terms, if it is not signed, or if it does not indicate the length of time the offer remains open. The statement as to the open offer must be separately signed. The City expects that bidders shall leave their offers open for at least 30 days.

Notice of acceptance will be in the form of the City's standard Purchase Order, which form will be sent to the successful bidder and which will make reference to the bid form previously submitted.

The City reserves the right to reject any and all bids.

10/01/18

Date

A handwritten signature in black ink, appearing to read "Larry Helms", written over a horizontal line.

City Manager

Bulletin Board, City-County Building, Wheeling, WV

Questions please contact LARRY HELMS at (304) 234-3776

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS, that the _____
(hereinafter called the Principal) and _____
(hereinafter called the Surety), a corporation chartered and existing under the laws of the State of _____ with its principal offices in the City of _____ and authorized to do business in the State of West Virginia and held and firmly bound unto the City of Wheeling, West Virginia in the full and just sum of _____ Dollars (\$_____) good and lawful money of the United States of America to be paid upon demand of the CITY OF WHEELING WEST VIRGINIA, to which payment well and truly to be made the Principal and the Surety bind themselves, their heirs, executors, administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted to the CITY OF WHEELING, WEST VIRGINIA, a proposal for furnishing certain machinery and equipment and constructing certain portions of the Project for the City of Wheeling designated as _____ and,

WHEREAS, the Principal desires to file this bond in accordance with law, in lieu of the certified bidder's check otherwise required to accompany this Proposal,

NOW THEREFORE: The conditions of this obligation are such that if the Proposal be accepted, the Principal shall, within ten days after the date of receipt of a written notice of award of contract, execute a contract in accordance with the Proposal and upon the terms, conditions and price set forth therein, of the form and manner required by the CITY OF WHEELING, WEST VIRGINIA, and execute a sufficient and satisfactory contract performance and payment bonds payable to the CITY OF WHEELING, WEST VIRGINIA, in an amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to said City, then this obligation to be void, otherwise to be and remain in full force and virtue in law, and the Surety shall upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid City upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

FORM OF BID BOND - 2

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20_____.

(Principal)

BY _____
(Seal)

(Surety)

(Seal)

Countersigned _____

Local Resident Producing Agent for _____

Specifications for
City of Wheeling Fire Department
for
1750 GPM Pumper

INSTRUCTIONS TO ALL BIDDERS

QUESTIONNAIRES

Bidders shall complete questionnaires, which shall be made part of the bid.

SPECIFICATION SHEETS

The specifications have a column on the right requesting a "Yes" or "No" answer. If bidder cannot comply and takes exception, it will be marked in the "No" column and a separate sheet attached listing the article and section number and what the bidder proposes to furnish. These specifications are to be returned and shall be part of the bid; and if contract is awarded, will become part of that contract.

Where drawings are required, bidder shall submit said drawings at time of bid opening. Failure to comply shall be reason for rejection of bid.

BIDDER WILL QUOTE TOTAL PRICE OF THE APPARATUS.

Options' List Items shall be price quoted separately and will not be considered in awarding of the contract.

A. INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the City of Wheeling of a complete apparatus equipped as hereinafter specified. With a view to obtaining the best results and the most acceptable apparatus for service in the Fire Department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform.

Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Apparatus proposed by the bidder shall meet the requirements of the National Fire Protection Association (NFPA) as stated in current Pamphlet 1901 for Pumper Fire Apparatus except where amended herein.

Bids will only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business for a minimum of twenty years. Further, bidder shall maintain dedicated service facilities at their manufacturing location for the repair and service of products. Evidence of such a facility shall be included in bidder's proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. They shall also show that they are in a position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract must conform. These specifications shall indicate size, type, model, and make of all component parts and equipment.

B. QUALITY AND WORKMANSHIP

The design of the apparatus must embody the latest approved automotive engineering practices.

The workmanship must be of the highest quality in its respective field. Special consideration will be given to the following points:

- Accessibility of the various units which require periodic maintenance operations
- Ease of operations (including both pumping and driving)
- Symmetrical proportions

Construction must be rugged and ample safety factors must be provided to carry loads as specified and to meet both on and off-road requirements and speed conditions as set forth under "Performance Tests and Requirements."

C. U.S.A. MANUFACTURER

The engine, transmission, pump, chassis, cab and body shall be manufactured in the United States and the entire apparatus shall be assembled within the borders of the continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

D. EXCEPTIONS TO SPECIFICATIONS

Exceptions will be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". The exception list will refer to the specification page number and paragraph. The final decision of equal to or superior to will be determined by the Wheeling Fire Department.

E. DELIVERY

Apparatus, to insure proper break-in of all components while still under warranty, SHALL BE

DELIVERED UNDER ITS OWN POWER - rail or truck freight is not acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care, and maintenance of the equipment delivered.

F. END PRODUCT QUESTIONNAIRE

The manufacturer shall provide the Purchaser with a copy of the EPQ approval which is the engine manufacturer's approval of the engine installation. This approval letter must show that the engine installation has successfully passed the engine manufacturer's cooling test requirements and that the fuel system, lube system, air intake system, exhaust system, and electrical system on the engine are installed in accordance with the engine manufacturer's recommendations. A copy of this approval shall be included with each Bidder's proposal. NO EXCEPTIONS.

G. EXPERIMENTAL APPARATUS

Bid proposals for furnishing experimental or unproven apparatus will not be considered. Bidder must be able to show that the type of apparatus proposed has been in actual fire service for a minimum of three years.

The City of Wheeling reserves the right to reject any or all bids or to accept the bid deemed most advantageous to the City.

QUESTIONNAIRE (1 of 2)

NAME OF BIDDER: _____

1. MAKE OF APPARATUS: _____

2. MANUFACTURER OF CHASSIS: _____

3. MANUFACTURER OF CAB: _____ MATERIAL _____

4. MANUFACTURER OF BODY: _____ MATERIAL _____

5. MANUFACTURER OF TANK: _____ MATERIAL _____

6. ENGINE: MAKE _____ MODEL _____

7. TRANSMISSION: MAKE _____ MODEL _____

8. PUMP: MAKE _____ MODEL _____

AXLES

9. FRONT: MAKE _____ MODEL _____ CAPACITY _____

AXLES

10. REAR: MAKE _____ MODEL _____ CAPACITY _____

11. GROSS VEHICLE WEIGHT OF APPARATUS: _____

12. WHEELBASE: _____ INCHES TURNING RADIUS: _____ FEET

13. OVERALL HEIGHT: _____ ANGLE OF DEPARTURE: _____ DEGREES

14. OVERALL LENGTH: _____ ANGLE OF APPROACH: _____ DEGREES

15. OVERALL WIDTH: _____

QUESTIONNAIRE (2 of 2)

16. ADDRESS OF FACTORY WHERE APPARATUS WILL BE ASSEMBLED:

17. ADDRESS OF NEAREST SERVICE CENTER:

18. LIST AT LEAST FIVE CITIES PRESENTLY USING THIS TYPE OF APPARATUS:

19. APPROXIMATE DELIVERY DATE: _____

WARRANTY QUESTIONNAIRE

FOR EACH COMPONENT, PLEASE PROVIDE:

- NAME OF WARRANTY COMPANY
- THE WARRANTY PERIOD

COPIES OF WARRANTIES ARE TO BE INCLUDED WITH BID.

CHASSIS:

Warrantied by _____
Length of Warranty _____

CAB:

Warrantied by _____
Length of Warranty _____

BODY:

Warrantied by _____
Length of Warranty _____

ENGINE:

Warrantied by _____
Length of Warranty _____

TRANSMISSION:

Warrantied by _____
Length of Warranty _____

PUMP:

Warrantied by _____
Length of Warranty _____

TANK:

Warrantied by _____
Length of Warranty _____

GENERAL REQUIREMENTS

At the time of submitting bid, bidder shall include drawings of the proposed apparatus. Drawings shall show overall dimensions of the apparatus and layout of compartments with sizes.

A qualified and responsible representative of the manufacturer shall deliver the apparatus and remain in the City of Wheeling for a sufficient amount of time to instruct Fire Department personnel in the operation, care and maintenance of the equipment delivered. To insure proper break-in of all compartments while under warranty, apparatus shall be delivered under its own power.

The successful bidder shall arrange for two inspection visits to the apparatus plant by no more than three representatives of the City of Wheeling Fire Department, with transportation, lodging, and other related expenses to be borne by the bidder. The Chief of the Fire Department will determine at what stage of production the first visit will be made. The second visit will be made upon completion of the apparatus, but prior to its delivery to the City of Wheeling.

At least three copies of the operation manual and two copies of the parts and maintenance manual shall be furnished at the time of delivery. One complete set of hard copy shop manuals shall be provided for the engine.

At least one certified copy of the manufacturer's three-hour factory run-in test of the apparatus delivered shall be furnished as outlined in NFPA 1901.

U.L.I. test must be made at factory of the bidder and certifications forwarded to the Chief of the Fire Department.

Bidder shall enclose with bid, a complete copy of all warranties which will be signed by an officer of the corporation by whom it is issued and shall also include any warranties pertaining to components of the apparatus.

Bidder shall bid only one make of apparatus and this should be considered as top of the line.

Failure to fill out questionnaires as provided with these specifications shall be reason for rejection of bid.

Apparatus shall be completed in the factory of bidder where the final inspection of the completed apparatus will be made.

LIABILITY OF CONTRACTOR

A bid bond in the amount of 10% of the total amount of the bid will be furnished at the time of the bid opening.

Successful bidder must provide the City of Wheeling with a performance bond of 100% of their proposal as a guarantee that the equipment furnished is in full compliance with the City of Wheeling's specifications. The City of Wheeling has the right to reject the equipment and the performance bond to be forfeited to the City of Wheeling as damages for failure of

successful bidder to fully comply with the City of Wheeling's specifications; the specifications as prepared by the City of Wheeling becoming a part of the contract.

The contractor shall defend any and all lawsuits, assume all liability for any and all claims made against the City of Wheeling or any of its officials or agents for use of any patented process devise or article forming a part of the apparatus or any appliances furnished under contract.

Responsibility for the apparatus and equipment shall remain with the manufacturer until the satisfactory completion of acceptance test and formally accepted by the City of Wheeling.

GENERAL DESIGN

Apparatus shall be a four-door, four-man cab. Cab will be of the full tilting type. Door shall open minimum 90 degrees from cab for egress and entry of firefighters with full personal protective equipment.

The apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service. All parts of the apparatus shall be strong enough to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and repair.

Where special tools which are not normally used or available are required to service any components of the apparatus built or supplied by the manufacturer, such tools shall be provided with the apparatus.

CARRYING CAPACITY

It shall be the responsibility of the manufacturer to provide GAWR, GCWR, and GVWR adequate to carry the specific hose load and personnel weight; and miscellaneous equipment allowance as outlined in NFPA-1901, latest Edition.

Apparatus and chassis manufacturers shall furnish certificate of GVWR, GCWR, and GAWR on a name plate affixed to the vehicle.

DIMENSIONS

- | | |
|--------------------------|---|
| • Height – 10 Feet | Maximum overall height (including lights & equipment) |
| • Width – 98 Inches | Maximum overall width |
| • Length – 30 Feet | Maximum |
| • Wheelbase – 186 Inches | Maximum |

OTHER

- Angle of departure shall be no less than 11 degrees.
- Angle of approach shall be no less than 13 degrees.

WORK SCHEDULE

Work on this contract must begin as soon as possible and not later than 10 days upon receipt of Notice to Proceed by the Contractor.

The successful bidder will pay as liquidated damages the sum of \$100.00 for each consecutive calendar day thereafter that the time consumed in completing the work exceeds the time allowed as provided in the agreement.

BID SUBMISSION

To insure consideration, all bids must:

- Be made on the bidding forms attached hereto
- Give the price for the 1750 GPM pumper
- Be signed and acknowledged by the bidder's chairman, president, or other senior officer.
- Be enclosed in a sealed envelope and labeled BID FOR: 1750 GPM PUMPER

- Be sent to Mr. Robert Herron, City Manager
 City of Wheeling
 1500 Chapline Street
 Wheeling, WV 26003

The City of Wheeling reserves the right to reject any or all bids. Without limiting the generality of the foregoing, any bid which is incomplete, obscure, or irregular may be rejected; any bid having erasures or corrections in the price sheet may be rejected; any bid which omits an entry on any one or more items in the price sheet may be rejected; any bid in which the unit prices are omitted, or in which unit prices are obviously unbalanced, may be rejected; any bid accompanied by an insufficient or irregular certified check or bid bond may be rejected.

If the contract is awarded, it will be awarded by the Owner, to a responsible bidder on the basis of the most favorable bid. The contract will require the completion of the work according to the contract documents.

BID GUARANTY

The bid must be accompanied by a bid guaranty, of five percent of the amount of the bid or bid bond with surety acceptable by the Owner.

At the option of the bidder, the guaranty may be a certified check or bank draft. No bid will be considered unless it is accompanied by the required guarantee.

Certified check or bank draft must be made payable to the order of the Owner. CASH DEPOSITS WILL NOT BE ACCEPTED. The bid guaranty shall insure the execution of the agreement and the furnishing of the surety bond or bonds by the successful bidder, all as required by the contract documents.

Certified check or bank drafts, or the amount thereof, of unsuccessful bidders will be

returned as soon as practical after the awarding of the contract.

AWARD OF THE CONTRACT - REJECTION OF BIDS

The contract will be awarded to the responsible bidder submitting the lowest bid complying with the conditions of the Invitation for Bids. The bidder to whom the award is made will be notified at the earliest possible date. The Owner, however, reserves the right to reject any and all bids and to waive any informalities in bids received whenever such rejection or waiver is in its interest. Bid proposals in which bid prices are obviously unbalanced may be rejected.

BONDS

The successful bidder will be required, prior to signing of the contract, to provide a performance and payment bond in the penal sum of 100% of the total cost of the work as a guarantee that the work will be constructed in accordance with the plans, specifications, terms and conditions and holding the City of Wheeling harmless from any suit which may be brought against the City for any damages arising from the herein contemplated work. The bond must be approved by the City Manager of the City and signed by a surety company authorized to transact business within this state. The form of bond shall be that as hereto provided. In lieu of a performance and payment bond, the City will accept a sum of 100% of the total cost of work in cash, U.S. Bonds or WV Bonds, which will be retained for a period of two years from the date of completion.

PROJECT TIME LIMITS

The bidder agrees to commence with the construction within 10 days of the Notice to Proceed and complete the project within the allotted calendar days specified in the proposal.

EXECUTION OF AGREEMENT - PERFORMANCE AND PAYMENT BOND

Failure to execute the formal contract or to furnish the payment and performance bonds within ten days after the notice will be considered as abandonment and the bidder's check will be forfeited.

The contractor shall execute and deliver to the owner prior to the signing of the contract, a performance and payment bond in the amount equal to the contract sum, guaranteeing the faithful performance of the contract and the payment of all labor, materials, and equipment entering into the contract. Bonds shall be furnished in accordance with the contract documents and shall be a surety thereon, by a company or companies as are acceptable to the Owner. Also see BONDS.

PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

Each contractor shall take out and maintain during the life of the contract such public liability and property damage insurance as shall protect the Owner, the contractor, and any subcontractor performing work covered by this contract from claims for damages for personal injury, including wrongful death, as well as from claims for property damages, which may arise from operation, under this contract, whether such operations be by himself

or by any subcontractor directly or indirectly employed on the project. CONTRACTOR SHALL NAME THE CITY OF WHEELING AS AN ADDITIONAL INSURED ON ALL POLICIES OF INSURANCE, including but not limited to, public liability and property damage insurance.

The amounts of such insurance, unless otherwise specified as a special term of the contract, shall be as follows:

- PUBLIC LIABILITY INSURANCE in the amount of not less than One Million Dollars (\$1,000,000.00) for injuries and/or wrongful death, to any one person and subject to the same limit for each person and in an amount of not less than One Million Dollars (\$1,000,000.00) on account of one accident and Property Damage Insurance in an amount not less than One Million Dollars (\$1,000,000.00).
- AUTOMOBILE AND TRUCK INSURANCE in an amount not less than One Million Dollars (\$1,000,000.00) for injuries and/or wrongful death, to any one person and subject to the same limit for each person and in an amount not less than One Million Dollars (\$1,000,000.00) on account of one accident and Property Damage Insurance in an amount not less than One Million Dollars (\$1,000,000.00).
- SPECIAL HAZARDS, if there is a possibility of such hazards existing in the work contemplated, shall be covered by rider or riders to the policy or policies.

PROOF OF INSURANCE

Contractor shall deliver to the Owner proper evidence of carriage of the Insurance required hereunder. Certificates will be acceptable proof of public liability, property damage, and Workmen's Compensation Insurance. The above certificates will be delivered to the Owner prior to the signing of the contract.

RESPONSIVE BID PACKAGE

The bid shall include a verified statement of the bidder's qualifications, which qualifications shall be set forth in the attached form and submitted at the time the completed bidding form is submitted.

DEFINITIONS

Wherever used in any of the Instructions to Bidders or Specifications the term "Owner" shall mean the City of Wheeling.

No oral interpretations shall be made to any bidder as to the meaning of any of the contract documents or be effective to modify any of the provisions of the contract documents. Every request for an interpretation shall be made in writing and addressed and forwarded to the Engineer, who shall give a written response to all known prospective bidders.

Table of Contents

INTENT OF SPECIFICATIONS 11

STATEMENT OF EXCEPTIONS TO NFPA 1901 11

QUALITY AND WORKMANSHIP 11

PERFORMANCE TESTS AND REQUIREMENTS..... 12

FAILURE TO MEET TESTS 12

EXCEPTIONS TO SPECIFICATIONS..... 13

GENERAL CONSTRUCTION 13

DELIVERY REQUIREMENTS 13

PURCHASER RIGHTS 13

U.S.A. MANUFACTURER 13

MANUFACTURER'S EXPERIENCE 14

ELIMINATION OF DIVIDED RESPONSIBILITY 14

FAMA COMPLIANCE 14

FUTURE PURCHASES AND TAG ON ORDERS 14

CONFIGURATION OF TAG ON ORDERS 14

PROPOSAL DRAWING 15

APPROVAL DRAWING 15

 WIRING SCHEMATIC 15

 Electrical System 15

PROPOSAL GUARANTEE..... 15

 Performance Bond 15

 Inspection Trips..... 15

 Severe Duty Cab and Chassis 16

 WHEELBASE 16

 SINGLE FRAME RAILS 16

 FRONT TOW EYES, BELOW BUMPER..... 17

 TOW EYES, PAINTED FINISH 17

 REAR TOW EYES 17

 STEERING 17

 DRIVELINE 17

 ENGINE..... 18

 AIR COMPRESSOR 18

 LUBE OIL..... 18

STARTER.....	18
EXHAUST SYSTEM	18
AFTER TREATMENT SYSTEM	19
ON-BOARD DIAGNOSTIC (OBD) SYSTEM.....	19
ENGINE WARRANTY	19
AIR CLEANER/INTAKE	19
PRIMARY FUEL FILTER/WATER SEPARATOR	20
SECONDARY FUEL FILTER	20
TRANSMISSION	20
TRANSMISSION FLUID.....	20
ENGINE BRAKE	21
TRANSMISSION COOLER	21
TRANSMISSION SHIFTER	21
COOLING SYSTEM	21
RADIATOR	22
CHARGE AIR COOLER	22
COOLANT	22
HOSES & CLAMPS.....	22
FAN	22
FAN CLUTCH.....	23
SURGE TANK	23
FUEL TANK	23
FUEL FILL	23
FUEL COOLER	24
DIESEL EXHAUST FLUID TANK	24
ALTERNATOR.....	24
BATTERIES	24
BATTERY JUMPER TERMINAL.....	25
120V SHORELINE INLET & AUTO EJECT	25
120-VOLT OUTLET	25
BATTERY CHARGER	25
FRONT AXLE	25
SUSPENSION (FRONT)	25
ENHANCED FRONT SUSPENSION SYSTEM.....	26
FRONT TIRES	26
REAR AXLE.....	26

TOP SPEED	26
SUSPENSION (REAR).....	26
REAR TIRES.....	27
TIRE PRESSURE MONITOR.....	27
WHEELS.....	27
HUB COVERS	27
LUG NUT CAPS	27
FRONT MUD FLAPS	27
REAR MUD FLAPS.....	28
BRAKES, Front	28
BRAKES, Rear	28
Parking Brake	28
AIR BRAKE SYSTEM	28
AIR COMPRESSOR	29
AUTO PUMP TIMER.....	29
AIR BRAKING ABS SYSTEM	29
AUTOMATIC TIRE CHAIN SYSTEM	30
COMPRESSION FITTINGS ON AIR SYSTEM	30
MISCELLANEOUS CHASSIS EQUIPMENT.....	31
.....	31
Exhaust Adapter.....	31
.....	31
.....	31
ALUMINUM CAB	31
CAB DESIGN	31
CAB SUB-FRAME	32
CAB DIMENSIONS.....	33
ROOF DESIGN.....	33
FENDER CROWNS.....	33
CAB INSULATION.....	33
EXTERIOR GLASS	33
SUN VISORS.....	34
CAB STEPS	34
STEP LIGHTS	34
CAB STRUCTURAL INTEGRITY.....	34
SEAT BELT TESTING	35

CAB TILT SYSTEM	35
MANUAL CAB LIFT.....	35
CAB DOORS.....	35
WINDOWS.....	36
SIDE WINDOWS.....	36
WINDSHIELD WIPERS.....	36
CAB HANDRAILS.....	36
COAT HOOKS FOR GRAB HANDLES.....	37
CAB DOOR HANDRAILS.....	37
MIRRORS.....	37
GRILLE.....	37
LOWER GRILLE.....	38
.....	38
BUMPER.....	38
BUMPER SIDES.....	38
AIR HORNS.....	38
LANYARD CONTROL FOR AIR HORNS.....	38
ELECTRONIC SIREN.....	38
MOMENTARY SWITCH.....	39
SIREN SPEAKER.....	39
SPEAKER MOUNTING.....	39
FEDERAL Q2B SIREN.....	39
FOOT SWITCH, DRIVER'S SIDE.....	39
FOOT SWITCH, OFFICER'S SIDE.....	39
CAB EXTERIOR LIGHTING.....	40
HEADLIGHTS.....	40
HEADLIGHT FINISH.....	40
FRONT TURN SIGNALS.....	40
CAB INTERIOR.....	40
INTERIOR DOOR PANELS.....	40
REFLECTIVE MATERIAL, CHEVRON STRIPING, INTERIOR CAB DOORS, ORAFOL REFLEXITE.....	41
CAB FLOOR COVERING.....	41
ENGINE ENCLOSURE (SMALL PROFILE).....	41
ENGINE ENCLOSURE COVERING.....	41
TOOL MOUNTING PLATE.....	41
ENGINE HOOD LIGHT.....	42

WORK SURFACE	42
Antenna	42
INSTRUMENT PANEL.....	43
MASTER BATTERY & IGNITION SWITCH	43
DIESEL PARTICULATE FILTER CONTROLS.....	44
INSTRUMENTATION & CONTROLS.....	44
CENTER CONTROL CONSOLE.....	45
OVERHEAD CONTROL CONSOLE	46
ENGINE WARNING SYSTEM	47
PUMP SHIFT MODULE.....	47
PROGRAMMABLE LOAD MANAGER	47
HIGH IDLE.....	48
AUXILIARY POWER POINT	48
USB POWER POINT	48
CAB ACCESSORY FUSE PANEL	48
POWER & GROUND STUDS, OVERHEAD COMMAND CONSOLE	48
POWER & GROUND STUDS, LOWER COMMAND CONSOLE	49
VEHICLE DATA RECORDER.....	49
LIGHTING CAB INTERIOR.....	49
LIGHTING CREW CAB INTERIOR	49
HEATER/DEFROSTER/AIR CONDITIONER	50
HEATER/DEFROSTER/AIR CONDITIONING CONTROLS.....	50
FLOORBOARD HEATING DUCT	50
DEFROSTER DIFFUSER.....	50
TOOL MOUNTING PLATE.....	50
AUXILIARY DEFROSTER FAN.....	51
AUXILIARY DEFROSTER FAN.....	51
DRIVER'S SEAT.....	51
HELMET STORAGE.....	51
OFFICER'S SEAT	51
UNDER SEAT STORAGE COMPARTMENT	52
HELMET STORAGE.....	52
EMS CABINET, REAR FACING.....	52
EMS CABINET, REAR FACING.....	52
CREW SEAT – DRIVER'S SIDE, FORWARD FACING, INBOARD.....	52
HELMET STORAGE.....	53

CREW SEAT – OFFICER’S SIDE, FORWARD FACING, INBOARD53

HELMET STORAGE..... 53

SEAT UPHOLSTERY COLOR 53

SCBA BRACKETS 53

SEAT BELT WARNING SYSTEM 54

CREW SEAT COMPARTMENT 54

FIRE PUMP HALE QMAX XS 1750 GPM 54

PUMP TRANSFER CASE – G SERIES..... 55

PUMP SEAL 55

PUMP ANODE 55

PUMP TEST & CERTIFICATION..... 56

AUXILIARY COOLER 56

PUMP CONNECTIONS 56

TANK TO PUMP..... 56

VALVE..... 57

VALVE ACTUATOR..... 57

TANK FILL 57

VALVE..... 57

VALVE ACTUATOR..... 57

PRESSURE GOVERNOR..... 58

INTAKE RELIEF 58

6 PUMP INLET 58

2.5 LEFT SIDE INLET 58

VALVE..... 58

VALVE ACTUATOR..... 59

THREAD TERMINATION..... 59

6 PUMP INLET 59

2.5 RIGHT SIDE INLET 59

VALVE..... 59

VALVE ACTUATOR 60

THREAD TERMINATION..... 60

DISCHARGE #1 - LEFT 60

VALVE..... 60

VALVE ACTUATOR 60

2.5 PRESSURE GAUGE 61

THREAD TERMINATION..... 61

DISCHARGE #2 - LEFT61

VALVE.....61

VALVE ACTUATOR61

2.5 PRESSURE GAUGE62

THREAD TERMINATION.....62

DISCHARGE #3 - RIGHT62

VALVE, SLOW CLOSE62

VALVE ACTUATOR.....62

2.5 PRESSURE GAUGE63

THREAD TERMINATION.....63

DISCHARGE #4 - RIGHT63

VALVE.....63

VALVE ACTUATOR64

2.5 PRESSURE GAUGE64

THREAD TERMINATION.....64

2.5 REAR DISCHARGE64

VALVE.....64

VALVE ACTUATOR65

2.5 PRESSURE GAUGE65

THREAD TERMINATION.....65

DELUGE RISER65

.....65

VALVE ACTUATOR- Electric65

2.5 PRESSURE GAUGE66

DECK GUN TERMINATION66

Deck Gun.....66

CROSSLAY 2.5.....66

SPEEDLAYS66

VALVE.....67

VALVE ACTUATOR67

2.5 PRESSURE GAUGE67

THREAD TERMINATION.....67

MASTER PUMP DRAIN67

DRAIN VALVES LIFT UP STYLE.....68

PUMP AND GAUGE PANELS68

PANEL FINISH68

COLOR CODING	68
Pump Panel Air Connection	68
PUMP PANEL LIGHTS LED	69
PUMP PANEL GAUGES AND CONTROLS.....	69
PRIMING SYSTEM.....	69
(1) PRIMER BUTTON - MAIN SUCTION.....	69
COMPRESSION FITTINGS ON AIR SYSTEM	69
AIR HORN BUTTON	70
4.5 MASTER GAUGES	70
WATER TANK GAUGE.....	70
WATER TANK.....	70
WATER TANK.....	71
APPARATUS BODY.....	71
REAR STEP COMPARTMENTATION	72
COMPARTMENTATION LEFT SIDE	72
COMPARTMENTATION RIGHT SIDE	72
BODY SUB-FRAME.....	72
COMPARTMENT INTERIOR - L1.....	73
ADJUSTABLE SHELF	73
COMPARTMENT MATTING	73
COMPARTMENT INTERIOR - L2.....	73
TILT DOWN DRAWER.....	73
COMPARTMENT MATTING	73
COMPARTMENT INTERIOR - L3.....	73
ADJUSTABLE SHELF	73
COMPARTMENT DIVIDER.....	74
ADJUSTABLE VERTICAL SLIDE-OUT PANEL	74
COMPARTMENT MATTING	74
COMPARTMENT INTERIOR - R1	74
ADJUSTABLE SHELF	74
COMPARTMENT MATTING	74
.....	74
COMPARTMENT INTERIOR - R2	74
ADJUSTABLE SHELF	75
ADJUSTABLE ROLLOUT DRAWER	75
COMPARTMENT MATTING	75

COMPARTMENT INTERIOR - A1	75
ADJUSTABLE SHELF	75
600# SLIDE-MASTER TRAY	75
COMPARTMENT MATTING	75
UNISTRUT.....	76
ROLL-UP COMPARTMENT DOORS	76
REAR COMPARTMENT DOOR.....	76
COMPARTMENT LIGHTING	76
HOSE BED.....	77
HOSE BED COVER.....	77
HOSE BED DIVIDERS.....	77
BODY HANDRAILS	77
FRONT BODY STEPS.....	78
REAR STEPS	78
RUB RAILS	78
ALUMINUM TREADPLATE	78
AIR BOTTLE COMPARTMENTS	79
GROUND LADDERS.....	79
LADDER RACK.....	79
LICENSE PLATE BRACKET.....	79
BODY ELECTRIC SYSTEM.....	80
BACK-UP ALARM	81
STOP/TAIL/TURN/REVERSE LIGHTS.....	81
LED ICC/MARKER LIGHTS	81
STEP LIGHTS	81
GROUND LIGHTING.....	81
REAR WORK LIGHTS	82
OPTICAL WARNING SYSTEM	82
UPPER LEVEL WARNING DEVICES	82
OPTICOM	82
LOWER LEVEL WARNING DEVICES	83
TRAFFIC ADVISOR.....	83
SCENE LIGHTS	83
GENERATOR	84
BREAKER BOX.....	84
BREAKER PANEL.....	84

120-VOLT OUTLET	84
Transfer Switch	84
CORD REEL	84
FOUR WAY RECEPTACLE	85
TRIPOD MOUNTED LED SCENE LIGHT	85
BROW MOUNTED LED SCENE LIGHT	85
CORROSION REDUCTION POLICY	85
PAINTING	88
PAINT-TWO TONE CAB.....	89
PAINTED FRAME	89
LETTERING.....	89
CHEVRON STRIPING, REAR BODY OUTBOARD, ORAFOL REFLEXITE.....	90
Striping.....	90
MISCELLANEOUS EQUIPMENT FURNISHED	90
Pike Poles	90
OPERATION AND SERVICE MANUALS	90
APPARATUS COMPLETION	90
WARRANTIES	91
MANUFACTURING & LOCATIONS	91
The Following items will be included in the bid and delivered to the Wheeling Fire Dept. prior to apparatus arrival.	91

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete apparatus equipped as hereinafter specified. With a view of obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. The apparatus shall conform to the requirements of the current (at the time of bid) National Fire Protection Association Pamphlet #1901 for Motor Fire Apparatus unless otherwise specified in these specifications.

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

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract must conform. Computer run-off sheets are not acceptable as descriptive literature.

The specifications shall indicate size, type, model and make of all component parts and equipment.

STATEMENT OF EXCEPTIONS TO NFPA 1901

If, at the time of delivery, the apparatus manufacturer is not in compliance, a statement of exceptions must be provided as follows:

- The specific standard affected.
- A statement describing why the manufacturer is not in compliance.
- A description of the remedy, and who the responsible party is.

The document must be signed by an officer of the company, and an authorized agent of the purchaser. NO EXCEPTIONS

QUALITY AND WORKMANSHIP

The design of the apparatus must embody the latest approved automotive engineering practices.

The workmanship must be the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility to various areas requiring periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.

Construction must be rugged and ample safety factors must be provided to carry loads as specified and to meet both on and off road requirements and speed as set forth under "Performance Test and Requirements."

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be documented with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall be approximately 66% on the rear axle. The successful bidder shall furnish a weight certification showing weight on the front and rear axle, and the total weight of the completed apparatus at the time of delivery.

- a. The apparatus must be capable of accelerating to 30 MPH from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed engine RPM.
- b. The service brakes shall be capable of stopping the fully loaded vehicle within 35 feet from a speed of 25 MPH on a level concrete highway.
- c. The apparatus, fully loaded, shall be capable of obtaining a speed of 50 MPH on a level highway with the engine not exceeding 95% of its governed RPM (full load).
- d. The apparatus shall be tested and approved by a qualified testing agency in accordance with their standard practices for pumping engines.
- e. The contractor shall furnish copies of the Pump Manufacturer's Certification of Hydrostatic Test (if applicable), the Engine Manufacturer's current Certified Brake Horsepower Curve and the Manufacturer's Record of Construction Details.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, a second trial may be made at the option of the bidder within thirty (30) days of the date of the first trials. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for

rejection. Permission to keep and/or store the apparatus in any building owned or occupied by the purchaser shall not constitute acceptance of same.

EXCEPTIONS TO SPECIFICATIONS

The following specifications shall be strictly adhered to. Exceptions shall be considered if they are deemed equal to or superior to the specifications, provided they are fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS." Exceptions shall be listed by page and paragraph.

Failure to denote exceptions in the above manner shall result in immediate rejection of the proposal. In addition a general statement taking "TOTAL EXCEPTION" to the specifications shall result in immediate rejection of bid.

GENERAL CONSTRUCTION

The apparatus shall be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles so that all specified equipment, including filled water tank, a full complement of personnel and fire hose shall be carried without injury to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the International Association of Fire Chiefs and National Fire Association (or American Insurance Association). Certified Laboratories certificate shall be submitted by the manufacturer. Weight of apparatus shall meet all federal axle load laws.

DELIVERY REQUIREMENTS

The apparatus shall be completely equipped as per these specifications upon arrival and on completion of the required tests shall be ready for immediate service in the fire department of the purchaser. Any and all alterations required at the scene of delivery to comply with these specifications must be done at the contractor's expense.

PURCHASER RIGHTS

The Purchaser reserves the right to accept or reject any bid. The purchaser also reserves the right to award in their best interest and reserves the right to waive any formalities.

U.S.A. MANUFACTURER

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

MANUFACTURER'S EXPERIENCE

Each manufacturer shall have been in business making similar apparatus for a minimum of seventy-five (75) years and must have had single ownership for more than fifty (50) years.

ELIMINATION OF DIVIDED RESPONSIBILITY

It is required that each bidder produce the chassis and warrant the complete apparatus. To eliminate divided responsibility and service, the chassis and the complete apparatus, must be warranted by the same Company. The manufacturer shall state the number of years the Company has been producing their own chassis and body. Manufacturer shall state compliance with the paragraph. NO EXCEPTIONS.

FAMA COMPLIANCE

Manufacturer must be a current member of the Fire Apparatus Manufacturer's Association.

FUTURE PURCHASES AND "TAG ON" ORDERS

Bidder shall accept "tag on" orders to this bid proposal for a period not to exceed three (3) years from the bid opening date. Bidder shall honor the priced quoted for a period of 90 days from the date of the Bid opening. For the remainder of the year (275 days), Bidder shall agree to an economic price escalation of 1.5%. Future years beyond the initial first year Bidder shall agree to an economic price escalation of 3% as a normal course of business. Items outside the normal course shall include changes legislated by Federal, State or Local Governments that impact the cost to manufacture the truck. In addition, changes to NFPA 1901 that require additional cost shall be borne by the purchaser. These may include, but are not limited to changes that affect the major vendors of the fire apparatus industry such as pump manufacturer, seat manufacturer, electrical power supplies (generators) and power-train (engine & transmission).

Bidder shall honor the "tag on" order from any municipality within the United States or Canada.

CONFIGURATION OF "TAG ON" ORDERS

In many cases the entity wishing to "tag on" to an existing order may require their apparatus to be configured differently from the original proposed apparatus. Bidder shall allow changes to the configuration within good engineering guidelines. The changes shall be subject to current pricing in effect at the time of order. For example, a different engine may be required. This shall be considered a "change order" and the purchase price shall be adjusted up or down depending on the current option price.

PROPOSAL DRAWING

A general layout drawing depicting the apparatus layout and appearance shall be provided with the bid. The drawing shall consist of left side, right side, frontal and rear elevation views. Apparatus equipped with a fire pump, shall have a general layout view of the pump operators panel scaled the same as the elevation views. The drawing shall be a depiction of the actual apparatus proposed and not of a generic similar product.

APPROVAL DRAWING

After the award of bid and pre-construction conference, a detailed layout drawing depicting the apparatus layout and appearance including any changes agreed upon shall be provided for customer review and signature. The drawing will become part of the contract documents. The drawing shall consist of left side, right side, frontal and rear elevation views. Apparatus equipped with a fire pump, shall have a general layout view of the pump operators panel scaled the same as the elevation views.

WIRING SCHEMATIC

A CD containing wiring diagrams of the apparatus shall be provided at the time of delivery.

Electrical System

The entire electrical system Cab and Body shall be "HARD WIRED". Multi-Plex systems will be rejected.

PROPOSAL GUARANTEE

A certified check or bid bond in the sum of ten percent (10%) of the total bid price shall be submitted with the "Bid Proposal" at the time of the bid. The full amount of the bid surety shall be returned to the unsuccessful bidders following the award of the contract to the successful bidder.

Performance Bond

A Performance Bond will not be required unless a down payment is required by purchaser.

Inspection Trips

There will be two factory inspection trips for Three (3) WFD Personnel. One inspection at Mid-Build and the second at Final Inspection. If manufactures main factory is located more than 200 miles from Wheeling, WV

then bid shall include air travel, food and lodging. There will be a Pre-Construction meeting at the Wheeling Fire Department with appropriate company representatives present.

Severe Duty Cab and Chassis

A Severe Duty Cab and Chassis system shall be provided. The chassis shall be manufactured in the factory of the bidder. The chassis shall be designed and manufactured for heavy duty service with adequate strength and capacity of all components for the intended load to be sustained and the type of service required. The cab and chassis system, shall be considered the bidders "Top of the Line".

There shall be no divided responsibility in the production of the apparatus.

WHEELBASE

The approximate wheelbase shall be 185".

SINGLE FRAME RAILS

The chassis frame shall be of a ladder type design utilizing industry accepted engineering best practices. The frame shall be specifically designed for fire apparatus use.

Each frame rail shall be constructed of .375" thick-formed channels. The outer channel shall be 10.188" x 3.50" x .375". Inner reinforcements of 9.31" x 3.13" x .375" will span the front and rear suspension attachment locations. These inner reinforcements will spread the load between the suspension mounts.

Resistance to Bending Moment (RBM) at suspension mounts will be 1,590,000 in-lbs with a rail section modulus of 31.8 in.³

Resistance to Bending moment where only one rail is present will be 870,000 in-lbs with a rail section modulus of 17.4 in.³

Each rail is media blasted to remove scale, oil, and contaminants. This blasting also ensures paint adhesion. Each rail will be primed with Cathacoat 302HB, a high performance, two component, reinforced inorganic zinc-rich primer with proven cathodic protection of steel structures, prior to assembly.

The cross-members shall be constructed of minimum .375" formed channels and have formed gusseted ends at the frame rail attachment. Single axle rear suspensions will utilize 3 piece bolt assembled cross-members at each suspension hanger

.625 inch, grade 8 flange, Huck bolt fasteners shall be used on all permanently attached brackets to the frame to eliminate the need for bolt re-tightening. Additional hardware will be Grade 8 Zinc coated flange head locking fasteners.

A lifetime warranty shall be provided, per manufacturer's written statement.

FRONT TOW EYES, BELOW BUMPER

There shall be two front tow eyes with 3" diameter holes attached directly to the chassis frame, accessible below the front bumper.

TOW EYES, PAINTED FINISH

The front tow eyes shall be painted to match the color of the chassis frame.

REAR TOW EYES

There shall be two tow eyes attached directly to the chassis frame rail and shall be chromate acid etched for superior corrosion resistance and painted to match the chassis.

STEERING

The steering system shall be a TRW wheel to wheel steering system that is tested and certified by TRW, consisting of a heavy duty TRW/Ross Model TAS-85 power steering gear, TRW PS36 steering pump, miter box, drag links, and a thermostatic controlled fan cooled system (set point 185 deg. F to 170 deg. F). The steering gear shall be bolted to the frame at the cross-member for steering linkage rigidity. Four (4) turns from lock to lock with an 18" diameter slip resistant rubber covered steering wheel. Steering column shall have six-position tilt and 2" telescopic adjustment. The cramp angle shall be 45 degrees with 315mm tires or 43 degrees with 425mm tires providing very tight turning ability.

DRIVELINE

The driveline shall consist of Spicer 1710 series dual grease fitting universal joints with "Half-Round" end yokes. The drive shaft shall be built with a heavy-duty steel tube 4.095" outside diameter x .180 wall

thickness. The shafts shall be dynamically balanced prior to installation into the chassis. A splined slip joint shall be provided in each shaft assembly. Universal joints shall be extended life. There shall be two (2) Zerk fittings in each universal joint assembly so the joint can be greased without turning the shaft.

ENGINE

Cummins Diesel L 9, 450 H.P. @ 2100 R.P.M., 1250 ft. lb. Torque @ 1400 R.P.M.

Displacement: 8.9 liter displacement.

Cylinders: 6

Bore: 4.49" (114mm)

Stroke: 5.69" (145mm)

AIR COMPRESSOR

The air compressor shall be an 18.7 CFM engine driven Wabco.

LUBE OIL

Lube oil cooler, and a full flow lube oil filter shall be provided.

STARTER

A 12-volt starter shall be provided, controlled by a switch on the left lower cab dash.

EXHAUST SYSTEM

The engine exhaust system shall include the following components:

Diesel Particulate Filter (DPF)

Diesel Oxidation Catalyst (DOC)

Diesel Exhaust Fluid (DEF)

Selective Catalytic Reduction Filter (SCR)

The SCR catalyst utilizes the DEF fluid, which consists of urea and purified water, to convert NOx into nitrogen and water. This will meet or exceed 2017 EPA emissions requirements.

The engine exhaust system shall be horizontal design constructed from heavy-duty truck components. The exhaust tubing shall be stainless steel to the DPF through to the SCR aluminized steel from the SCR to the exhaust tip. A heavy duty stainless steel bellows tube shall be used to isolate the exhaust system from the engine. The system shall be equipped with single canister consisting of a Diesel Oxidation Catalyst (DOC) and a Diesel Particulate Filter (DPF), and shall be mounted under the right side frame rail, meeting the specific engine manufacturer's specifications and current emission level requirements. The outlet shall be directed to the forward side of the rear wheels, exiting the right side with a heavy duty heat diffuser. The heat diffuser shall prevent the exhaust temperature from exceeding 851 deg. F during a regeneration cycle. A heat-

absorbing sleeve shall be provided on the exhaust pipe in the engine compartment area to reduce the heat, protect the alternator, and also to protect personnel while servicing the engine compartment.

AFTER TREATMENT SYSTEM

To meet EPA requirements of Particulate output, a DPF (Diesel Particulate Filter) is used. To meet EPA requirements of Nitrous Oxide output an SCR (Selective Catalytic Reduction) system utilizing DEF (Diesel Exhaust Fluid) is used.

ON-BOARD DIAGNOSTIC (OBD) SYSTEM

The engine shall be equipped with an on-board diagnostic (OBD) system which shall monitor emissions-related engine systems and components and alert the operator of any malfunctions. The OBD system is designed to further enhance the engine and operating system by providing early detection of emission-related faults. The engine control unit (ECU) will manage smart sensors located throughout the engine and after-treatment system. The system shall monitor component verification and sensor operation. There shall be warning lights located in the dash instrument panel to alert the operator of a malfunction. A data port shall be provided under the driver's side dash for the purpose of code reading and troubleshooting. All communication shall be provided through the J1939 data link.

ENGINE WARRANTY

The engine shall have a five (5) year or 100,000 mile warranty and approval by Cummins Diesel for Full Engine Coverage Plan (RVF) – which is their most complete engine coverage plan, which includes EGR components installation in the chassis. There shall be no deductible for the first two years. A one hundred dollar deductible shall apply for service beginning the third year.

AIR CLEANER/INTAKE

The engine air intake and filter shall be designed in accordance with the engine manufacturer's recommendations. It shall be 99.9% effective in removing airborne contaminants when tested per the industry standard SAE J726 procedure and offer a dirt holding capacity of at least 3.0 gm/cfm of fine dust (tested per SAE J726) offering superior engine protection.

The air filter shall be located at the front of the apparatus and shall be at least 66" above the ground, to allow fording deep water in an emergency situation.

An ember separator shall be provided in the engine air intake meeting, the requirements of NFPA 1901.

An Air Restriction warning light shall be provided and located on the cab dash.

PRIMARY FUEL FILTER/WATER SEPARATOR

A Cummins approved Fleetguard FS1090 fuel filter/water separator shall be remote mounted to the chassis frame rail.

SECONDARY FUEL FILTER

A Cummins approved Fleetguard FF63009 fuel filter will be remote mounted to the rear of the engine.

TRANSMISSION

The chassis shall be equipped with a Generation 5 Allison EVS3000 six (6) speed automatic transmission. It shall be programmed five (5) speed, sixth gear locked out, for fire apparatus vocation, in concert with the specified engine.

The transmission is communicated on the J-1939 through the communication port. The fifth gear shall be an overdrive ratio, permitting the vehicle to reach its top speed at the engine's governed speed. The dipstick is dipped in a rubber coating for ease in checking oil level when hot.

The chassis to transmission wiring harness shall utilize Metri-Pack 280 connectors with triple lip silicone seals and clip-type positive seal connections to protect electrical connections from contamination without the use of coatings.

Ratings: Max Input (HP) 450
Max Input (Torque) 1255 (lb ft)
Max Turbine (Torque) 1700 (lb ft)

Mechanical Ratios: 1st - 3.49:1
2nd - 1.86:1
3rd - 1.41:1
4th - 1.00:1
5th - 0.75:1
Reverse --5.03:1

TRANSMISSION FLUID

The transmission shall come filled with an Allison approved Synthetic Transmission Fluid that meets the Allison TES-295 specification.

ENGINE BRAKE

The engine shall be equipped with a Jacobs compression engine brake. An "On/Off" switch shall be provided on the instrument panel within easy reach of the driver.

The engine brake shall interface with the Wabco ABS brake controller to prevent engine brake operations during adverse braking conditions.

A pump shift interlock circuit shall be provided to prevent the engine brake from activating during pumping operations.

The brake light shall activate when the engine brake is engaged.

TRANSMISSION COOLER

The apparatus transmission shall be equipped with a Liquid-To-Liquid remote mounted cooler with aluminum internal components. The cooler shall be encased in an aluminum housing and mounted to the outside of the officer's side frame rail for accessibility and ease of service.

TRANSMISSION SHIFTER

An Allison "Touch Pad" shift selector shall be mounted to the right of the driver on the engine cover accessible to the driver. The shift position indicator shall be indirectly lit for nighttime operation.

COOLING SYSTEM

The cooling system shall be designed to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer's requirements, and EPA regulations.

The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress to the adjoining core(s).

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler, bolted to the top of the radiator to maximize cooling, recirculation shields, a shroud, a fan, and required tubing. All components shall consist of an individually sealed system.

RADIATOR

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

The radiator shall be equipped with a drain cock to drain the coolant for serviceability. The drain cock shall be located at the lowest point of the aluminum cooling system to maximize draining of the system.

CHARGE AIR COOLER

The charge air cooler shall be of a cross-flow design and constructed completely of aluminum with extruded tanks. The charge air cooler shall be bolted to the top of the radiator to allow a single depth core.

COOLANT

The cooling system shall be filled with a 50/50 mix. The coolant makeup shall contain ethylene glycol and de-ionized water to prevent the coolant from freezing to a temperature of -34 degrees F.

HOSES & CLAMPS

Silicone hoses shall be provided for all engine coolant lines.

All radiator hose clamps shall be spring loaded stainless steel constant torque hose clamps for all main hose connections to prevent leaks. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

FAN

The engine cooling system shall incorporate a heavy-duty composite 11- blade Z-series fan. It shall provide the highest cooling efficiently while producing the lowest amount of noise. This robust yet light-weight fan results in less wear and stress on motors and bearings.

A shroud and recirculation shield system shall be used to ensure air that has passed through the radiator is not drawn through again.

The fan tip to radiator core clearance shall be kept at a minimal distance to increase the efficiency of the fan and reduce fan blast noise.

FAN CLUTCH

A fan clutch shall be provided that shall allow the cooling fan to operate only when needed. The fan shall remain continuously activated when the truck is placed in pump gear.

SURGE TANK

The cooling system shall be equipped with an aluminum surge tank mounted to the officer's side of the cooling system core. The surge tank shall house a low coolant probe and sight glass to monitor the coolant level. Low coolant shall be alarmed with the check engine light. The surge tank shall be equipped with a dual seal cap that meets the engine manufacturer's pressure requirements, and system design requirements.

The tank shall allow for expansion and to remove entrained air from the system. There shall also be an extended fill neck to prevent system overflow and encroachment of expansion air space. Baffling shall be installed in the tank to prevent agitated coolant from being drawn into the engine cooling system.

FUEL TANK

The chassis shall be equipped with a 65-gallon stainless steel rectangular fuel tank. The fuel tank shall be certified to meet FMVSS 393.67 tests. It shall also maintain engine manufacturer's recommended expansion room of 5%.

The tank shall be removable by means of six (6) bolted connections and dropped. One (1) tank baffle shall be used.

Dual pick-up and return ports with a single 3/4" tank drawtube shall be provided for diesel generators if required.

The fuel lines shall be nylon braid reinforced fuel hose with brass fittings. The lines shall be carefully routed along the inside of the frame rails. All fuel lines are covered in high temperature rated split plastic loom. Single suction and return fuel lines shall be provided.

The fuel tank shall be mounted in a saddle with a barrier between the tank and the saddle. The bottom of the fuel tank shall contain a 1/2" drain plug.

FUEL FILL

The fuel tank shall be equipped with a 2-1/4" filler neck assembly with a 3/4" vent located on the driver's side of the truck. A fuel fill cap attached with a lanyard shall be provided.

FUEL COOLER

Installed on the apparatus fuel system shall be an Air-To-Liquid aluminum fuel cooler. The fuel cooler shall be located in the lowest module of the cooling system.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank. The tank shall have a capacity of 5 usable gallons and shall be mounted on the left side of the chassis frame.

The DEF tank fill neck shall accept only a 19mm dispensing nozzle versus the standard 22mm diesel fuel dispensing nozzle to prevent cross contamination. The DEF tank cap shall be blue in color to further prevent cross contamination.

A placard shall accompany fill location noting DEF specifications.

ALTERNATOR

A 270 ampere Prestolite/Leece Neville shall be provided with serpentine belt. The alternator shall generate 210 amperes at idle.

A low voltage alarm, audible and visual, shall be provided.

BATTERIES

The battery system shall be a single system consisting of four (4) negative ground, 12 volt Interstate Group 31 MHD batteries, cranking performance of 950 CCA each with total of 3800 amps, 185 minute reserve capacity with 25 ampere draw at 80 degrees Fahrenheit. Each battery shall have 114 plates. The batteries shall include a one-year warranty which shall be accepted nationwide.

The batteries shall be installed in a vented 304 stainless steel battery box with a removable aluminum cover to protect the batteries from road dirt and moisture. The battery cover shall be secured with four "T" handle rubber hold downs to provide easy access for maintenance and inspection. Stainless steel hardware will be used for installation. The batteries are to be placed on dri-deck and secured with a fiberglass hold down. The batteries shall be wired directly to starter motor and alternator.

The battery cables shall be 3/0 gauge. Battery cable terminals shall be soldering dipped, color-coded and labeled on heat shrink tubing with a color-coded rubber boot protecting the terminals from corrosion.

There shall be a 350-ampere fuse protecting the pump primer and a 250-ampere fuse protecting the electric cab tilt pump and other options as required.

BATTERY JUMPER TERMINAL

There shall be one set (two studs) of battery jumper terminals located by the battery box under the cab. The terminals shall have plastic color-coded covers. Each terminal shall be tagged to indicate positive/negative.

120V SHORELINE INLET & AUTO EJECT

The apparatus shall be equipped with a 120V shoreline inlet to provide power to the battery charger from an external source. The inlet shall include a Kussmaul 091-55-234-XXX Super 20 Auto Eject featuring a built in bar graph display on the cover. Also featuring a 12 volt solenoid which shall eject the shoreline cord away from vehicle path upon sensing engine start. After ejection, a weatherproof cover shall snap into position over inlet.

A 20 amp connector shall be provided and shipped loose for connecting the external shoreline cord to the inlet.

120-VOLT OUTLET

Two (2) 120-volt outlet with weatherproof cover shall be provided. All 120 volt wiring shall be installed in liquid tight conduit. These outlets shall be 5-15 House Plug Duplex and be located one in each EMS Compartment.

BATTERY CHARGER

A Kussmaul Auto Charge LPC 40 model #091-200-12-IND low profile 40 amp battery charger shall be provided and installed in the cab. The unit shall include an auxiliary 15 amp output circuit with power source selector for operating accessory loads. The charger shall be wired to the 120V shoreline inlet.

FRONT AXLE

A Meritor™ MFS-18-133A non-driving, front steer axle with a capacity of 19,000 pounds shall be provided. The axle shall have a 3.74" dropped I-beam, 10 bolt, hub piloted, furnished with oil seals.

SUSPENSION (FRONT)

The front suspension shall be a variable rate taper-leaf design, 54" long and 4" wide. Long life, maintenance free, urethane bushed spring shackles shall be utilized. All spring and suspension mounting shall be attached

directly to frame with high strength Huck bolts and self-locking round collars. Spring shackles and pins that require grease shall not be acceptable. NO EXCEPTIONS.

ENHANCED FRONT SUSPENSION SYSTEM

The front suspension shall have the handling, stability, and ride quality enhanced by the use of a Ride Tech auxiliary spring system and Koni high performance shock absorbers.

This system shall utilize three stage, urethane auxiliary springs, and high performance gas filled shock absorbers to control the deflection of the leaf springs, and dampen vibration normally transmitted to the chassis. This maintenance free system will be custom tuned to the apparatus gross weight rating for maximum performance, while maintaining a soft compliant ride. NO EXCEPTIONS.

A (3) three year 36,0000 mile warranty will be provided by the manufacturer.

FRONT TIRES

Front tires shall be Goodyear 315/80R22.5, load range L, G289 WHA highway tread, single tubeless type with a GAWR of 19,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 9.00 10 stud 11.25 bolt circle.

REAR AXLE

The rear axle shall be a Meritor™ RS-24-160 single reduction drive axle with a capacity of 24,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

TOP SPEED

The top speed shall be approximately 68 MPH.

SUSPENSION (REAR)

24,000 LB SPRING

A Reyco model 14514-01 rear spring suspension shall be provided. The rear semi-elliptic springs shall be 37-1/4" x 3 x 8 leaf with trailing arms. The trailing arms allow free movement of the axle from bump loads and deflections while holding the axle in chassis alignment. This suspension shall control axle wrap-up torque caused by accelerating or braking. The trailing arms shall be mounted in maintenance free rubber bushings at both ends. The left arm shall be adjustable in length for maximum accuracy of chassis alignment.

REAR TIRES

Rear tires shall be Goodyear 12R22.5, load range H, G622 Mud and Snow tread, dual tubeless type with a GAWR up to 27,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 8.25 10 stud with 11.25" bolt circle.

TIRE PRESSURE MONITOR

A Quick Pressure mechanical tire pressure sensor/indicator shall be provided for each wheel. The pressure sensor shall indicate if the tire is properly inflated. Each indicator shall have a green & red display visible inside a sight glass on the sensor. Full green indicates that the pressure is correct. Partial green/red indicates that the tire is under inflated by as little as 10%. Full red indicates that the tire is under inflated by 25% or more. The indicators shall replace the standard valve stem caps. A total of six (6) indicators shall be provided.

WHEELS

The front and rear wheels shall be ACCURIDE® brand aluminum.

HUB COVERS

Polished stainless steel hub covers shall be provided for the front and rear axle.

LUG NUT CAPS

Chrome plated lug nut caps shall be provided for the front and rear wheels.

FRONT MUD FLAPS

Hard rubber mud flaps shall be provided for front tires.

REAR MUD FLAPS

Hard rubber mud flaps shall be provided for rear tires.

BRAKES, Front

The front brakes shall be Meritor S-cam style. They shall be 16.5" x 6" with heavy-duty return springs, and a double anchor pin design. They shall also have quick-change shoes for fast easy brake relining.

BRAKES, Rear

The rear brakes shall be Meritor S-cam style. They shall be 16.5" x 7" with heavy-duty return springs, and a double anchor pin design. They shall also have quick-change shoes for fast easy brake relining. The Spring Brake Chambers shall be 30/36 Chambers if possible.

Parking Brake

A Four Wheel Parking Brake System Shall be provided

AIR BRAKE SYSTEM

The vehicle shall be equipped with air-operated brakes. The system shall meet or exceed the design and performance requirements of current FMVSS-121 and test requirements of current NFPA 1901 standards.

Each wheel shall have a separate brake chamber. A dual treadle valve shall split the braking power between the front and rear systems.

All main brake lines shall be color-coded nylon type protected in high temperature rated split plastic loom. The brake hoses from frame to axle shall have spring guards on both ends to prevent wear and crimping as they move with the suspension. All fittings for brake system plumbing shall be brass.

A Meritor Wabco System Saver 1200 air dryer shall be provided.

The air system shall be provided with a rapid build-up feature, designed to meet current NFPA 1901 requirements. The system shall be designed so the vehicle can be moved within 60 seconds of startup. The quick build up system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time. The vehicle shall not be required to have a separate on-board electrical air compressor or shoreline hookup to meet this requirement.

Four (4) supply tanks shall be provided. One air reservoir shall serve as a wet tank and a minimum of one tank shall be supplied for each the front and rear axles. A Schrader fill valve shall be mounted in the front of the driver's step well.

A spring actuated air release emergency/parking brake shall be provided on the rear axle. One (1) parking brake control shall be provided and located on the engine hood next to the transmission shifter within easy reach of the driver. The parking brake shall automatically apply at 35 ± 10 PSI reservoir pressure. A Meritor WABCO IR-2 Inversion Relay Valve, supplied by both the Primary and Secondary air systems, shall be used to activate the parking brake and to provide parking brake modulation in the event of a primary air system failure.

Accessories plumbed from the air system shall go through a pressure protection valve and to a manifold so that if accessories fail they shall not interfere with the air brake system.

AIR COMPRESSOR

A Kussmaul 091-9B-1-AD 120V 100 PSI air compressor shall be provided and installed in the cab. The vehicle mounted air compressor shall ensure that the air brake system is properly pressurized for immediate response of the unit. A pressure switch shall regulate operation and shall automatically sense low air pressure in the brake system and restore the proper pressure.

The unit shall have an auto drain which shall be installed on the outlet side of the air compressor and shall automatically purge water from the air discharge output. The water shall be ejected from the water separator bowl every time the compressor cycles off via a 120 volt solenoid.

The compressor shall be wired to the 120V shoreline connection.

AUTO PUMP TIMER

A Kussmaul 091-150-115 auto pump timer shall be provided to reduce wear on the Kussmaul Auto Pump AC compressor. The timer shall limit the duty cycle to one hour running followed by a one hour "OFF" time.

AIR BRAKING ABS SYSTEM

A Wabco ABS system shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to axles and all electrical connections shall be environmentally sealed from water and weather and be vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall sense approaching wheel lock and instantly modulate brake pressure up to 5 times per second to prevent wheel lock-up. Each wheel shall be individually

controlled. To improve field performance, the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, that circuit shall revert to normal braking action. A warning light at the driver's instrument panel shall indicate malfunction to the operator.

The system shall consist of a sensor clip, sensor, electronic control unit and solenoid control valve. The sensor clip shall hold the sensor in close proximity to the tooth wheel. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion-resistant and protected from electromagnetic interference. The electronic control unit shall monitor the speed of each wheel sensor and a microcomputer shall evaluate wheel slip in milliseconds.

AUTOMATIC TIRE CHAIN SYSTEM

The apparatus shall be equipped with an On-Spot brand Automatic Tire Chain System.

There will be one driver's side and one passenger's side chain unit.

A continuous duty solenoid shall be provided and activated by the dashboard switch, which opens and allows compressed air to flow to the chain units. Compressed air will be delivered to the solenoid from the vehicle's air tank. The solenoid shall be mounted on the frame rail or crossmember in close proximity of the chain units. This air/electric solenoid shall be 12-volts and draw no more than 1 ampere of current. Electrical wire shall be in accordance with NFPA 1901.

A 12-volt dashboard switch shall be provided so that the operator may engage the chains from the driver's seat. The switch shall be lighted to indicate when the chains are engaged. The switch shall come complete with a switch guard to avoid accidental engagement of the automatic chains. The switch guard shall be properly labeled. A dashboard sticker with operating instructions shall be provided.

COMPRESSION FITTINGS ON AIR SYSTEM

All air line fittings installed on the chassis shall be compression style fittings.

The following locations shall utilize push-on fittings:

- Pressure protection valve (accessory block)
- Double check valve (braking system, park brake)
- One way check valve (brake valve tank)
- Elbow Male Modified 1/4" tube x 1/4" MP (low air switch)
- Elbow Male 1/4" tube x 3/8"MP (brake pedal solenoid)
- Connector 1/4" x 3/8" MPT (brake pedal solenoid)

- Switch stoplight (Wabco sealed switch/brake light and service brake switch)
- Low pressure switch (PTC) (Wabco sealed switch/low air switch)

MISCELLANEOUS CHASSIS EQUIPMENT

Fluid capacity plate affixed below driver's seat.

Chassis filter part number plate affixed below driver's seat.

Maximum rated tire speed plaque near driver.

Tire pressure label near each wheel location.

Cab occupancy capacity label affixed next to transmission shifter.

Do not wear helmet while riding plaque for each seating position.

NFPA compliant seat belt and standing warning plates provided.

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Exhaust Adapter

A Plymovent Exhaust Connector shall be provided.

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ALUMINUM CAB

The cab shall be a full tilt 6-person cab designed specifically for the fire service.

CAB DESIGN

The apparatus chassis shall be of an engine forward, fully enclosed tilt cab design. There shall be four (4) side entry doors.

The cab shall be of a fully open design with no divider wall or window separating the front and rear cab sections. The cab shall be designed in a manner that allows for the optimum forward facing vision for crew. Cab designs that utilize roof mounted air conditioning units, are not desired.

The cab shall be constructed of high strength 5052H32 aluminum plate welded to 6061-T6 extruded aluminum framing.

The cab roof shall utilize 5" x 5" honeycomb re-enforced 6061 T6 aluminum extrusion, with fully radiused outer corner rails with integral drip channel and 6061 T6 ¾" x 2" x 3/16" aluminum box tubing type cross brace supports. Structures that do not include an integral drip channel will not be accepted. The box tubing type cross brace supports shall be installed in a curved fashion beginning from the midline of the apparatus cab and curving toward the exterior corner rails. This curvature will allow for increased strength in the event of a roll over while not allowing for rainwater buildup on the apparatus cab roof.

The cab sides shall be constructed from 1 ½" x 3" x 3/16" 6061 T6 extruded door pillars and posts that provide a finished door opening, extruded and formed wheel well openings supports, formed aluminum wheel well liners and box tubing type support braces.

The cab floor and rear cab wall shall utilize 1 ¾" x 4" x 3/16" 6061 T6 extruded box tubing type framing and support bracing.

The framework shall be of a welded construction that fully unitizes the structural frame of the cab.

The structural extrusion framework shall be overlaid with interlocked aluminum alloy sheet metal panels to form the exterior skin of the cab. The cab sides shall be constructed of 3/16" thick 5052H32 aluminum plate that slides into an integral channel of the extrusion framework. The plate is then skip welded into that channel to allow for tolerable flex while the apparatus travels down the roadway. Cab designs that utilize 1/8" thick aluminum for the cab sides shall not be acceptable.

The structural extrusion framework shall support and distribute the forces and stresses imposed by the chassis and cab loads and shall not rely on the sheet metal skin for any structural integrity.

The cab face extrusion framework shall be overlaid with 1/8" thick 5052H32 aluminum plate to allow for an aesthetically pleasing radiused cab face.

CAB SUB-FRAME

The cab shall be mounted to a 4" x 4" x 3/8" steel box tube sub-frame, and shall be isolated from the chassis, through the use of no less than six (6) elastomeric bushings. This substructure shall be completely independent of the apparatus cab. The sub frame shall be painted to match the primary chassis color.

The sub-frame shall be mounted to the chassis through the use of lubricated Kaiser Bushings for the front pivot point, and two (2) hydraulically activated cab latches, to secure the rear.

Cab mounting that does not include a sub-frame shall not be considered. NO EXCEPTIONS.

CAB DIMENSIONS

The cab shall be designed to satisfy the following minimum width and length dimensions:

Cab Width (excluding mirrors) shall not exceed 98"

Cab Length (from C/L of front axle)

To front of cab (excluding bumper) 68"

To rear of cab 62"

Total Cab Length (excluding bumper) 130"

ROOF DESIGN

The cab shall be of a flat roof design with side drip rails and shall satisfy the following minimum height dimensions:

Cab Dimensions Interior

Front 59"

Rear 55"

Cab Dimensions Exterior

Front 65"

Rear 65"

FENDER CROWNS

Polished stainless steel front axle fenderettes with full depth radiused wheel well liners shall be provided.

CAB INSULATION

The exterior walls, doors, and ceiling of the cab shall be insulated from the heat and cold, and to further reduce noise levels inside the cab. The cab interior sound levels shall not exceed 90 decibels at 45 mph in all cab seat positions. NO EXCEPTIONS

EXTERIOR GLASS

The cab windshield shall be of a two piece curved design utilizing tinted, laminated, automotive approved safety glass. The window shall be held in place by an extruded rubber molding. The cab shall be finished painted prior to the window installation.

SUN VISORS

The sun visors shall be made of dark smoke colored transparent polycarbonate. There shall be a visor located at both the driver and officer positions, recessed in a molded form for a flush finish.

CAB STEPS

The lower cab steps shall be no more than 22" from the ground. An intermediate step shall be provided, mid way between the lower cab step, and the cab floor.

The intermediate step shall be slightly inset to provide for safer ingress and egress. All steps shall be covered with material that meets or exceeds the NFPA requirements for stepping surfaces.

STEP LIGHTS

A white LED strip light shall illuminate each interior cab step. These lights shall illuminate whenever the battery switch is on and the cab door is opened.

CAB STRUCTURAL INTEGRITY

The cab of the apparatus shall be designed and so attached to the vehicle as to eliminate, to the greatest possible extent, the risk of injury to the occupants in the event of an accident.

The apparatus cab shall be tested to specific load and impact tests with regard to the protection of occupants of a commercial vehicle.

A test shall be conducted to evaluate the frontal impact strength of the apparatus cab to conform to the test J2420 and the "United Nations Regulation 29, Annex 3, paragraph 4, (Test A). A second test shall be conducted to evaluate the roof strength of the apparatus cab to conform to the Society Of Automotive Engineers (SAE) SAE J2422/SAE J2420 and "United Nations Regulation 29, Annex 3, paragraph 5, (Test B) and SAE J2420. The evaluation shall consist of the requirements imposed by ECE Regulation 29, Paragraph 5.

The test shall be conducted by a certified independent third party testing institution.

A letter stating successful completion of the above test on the brand of cab being supplied shall be included in the bid. There shall be "no exception" to this requirement.

SEAT BELT TESTING

The seat belt anchorage system shall be tested to meet FMVSS 207 Section 4.2a and FMVSS 210 section 4.2. Testing shall be conducted by an independent third party product evaluation company.

A copy of the certification letter shall be supplied with the bid documents.

CAB TILT SYSTEM

An electrically powered hydraulic cab tilt system shall be provided and shall lift the cab to an angle of 45 degrees, exposing the engine and accessories for fluid checks and service work. The system shall be interlocked to only operate when the parking brake is set.

The lift system shall be comprised of two (2) hydraulic lift cylinders, an electrically driven hydraulic pump, and a control switch. The hydraulic pump shall be located on the exterior of the frame rail on the driver's side of the chassis that can be easily accessible when the cab is tilted. A mechanical locking system consisting of an air operated actuator and a heavy radiused wall 3" x 3" aluminum extrusion will be provided to ensure the cab remains in the raised position in the event of a hydraulic failure. Additionally, each of the hydraulic lift cylinders shall incorporate a check valve, and velocity fuses that will activate should a sudden drop in pressure be detected. The cab tilt controls shall be interlocked to the parking brake to ensure the cab will not move, unless the parking brake is set. The cab tilt controls will consist of a momentary raise/lower switch and a two position cab safety lock switch.

The hydraulic lift cylinders will be connected to a steel cab sub-frame, and not directly to the cab. NO EXCEPTIONS

MANUAL CAB LIFT

There shall be a manually operated hydraulic pump for tilting the cab in case the main pump should fail. Access to the pump shall be located under the left corner of the front bumper.

CAB DOORS

The cab doorframes shall be constructed from 6061 T6 aluminum extrusions fitted with a 5052 H32 aluminum sheet metal skin and shall be equipped with dual weather seals. The outside cab door window opening shall be framed by a black anodized aluminum trim, to provide a clean appearance. The cab doors shall be equipped with heavy-duty door latching hardware, which complies with FMVSS 206. The door latch mechanism shall utilize control cable linkage for positive operation. A rubber coated nylon web doorstop shall be provided.

The doors shall be lap type with a 10 gauge full-length stainless steel flange and 3/8" diameter hinge pin and shall be fully adjustable.

All openings in the cab shall be grommeted or equipped with rubber boots to seal the cab from extraneous noise and moisture.

The cab doors shall be designed to satisfy the following minimum opening and step area dimensions:

Door Opening:

Front 36.5" x 73"

Rear 36.5" x 73"

WINDOWS

All four cab entry doors shall have manual roll-down windows, which shall all roll down completely.

SIDE WINDOWS

Fixed position side window shall be provided on each side of the cab between the forward cab area and the crew cab area. The windows shall be approximately 20.5" high x 16.50" wide to provide maximum visibility. The side windows shall be held in place by an extruded rubber molding with a chrome plated decorative locking bead.

WINDSHIELD WIPERS

Two (2) black anodized finish two speed synchronized electric windshield wiper system. Dual motors with positive parking. System includes large dual arm wipers with built in washer system. One (1) master control works the wiper, washer and intermittent wipe features. Washer bottle is a remote fill with a 4 quart capacity. Washer fill is located just inside of officer cab door.

The windshield wipers shall be interlocked with the Parking Brake Switch so only to operate when parking brake is released.

CAB HANDRAILS

There shall be a 24" long, handrail provided and installed, at each cab entrance. The handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to

form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange.

Sufficient space shall allow for a gloved hand to firmly grip the rail.

There shall be two (2) rubber coated grab handles provided and mounted on the interior of the cab, one each side, on the windshield post for ingress assistance. The handrail on the driver's side shall be approximately 11" long and the handrail on the officer's side shall be approximately 18" long.

COAT HOOKS FOR GRAB HANDLES

There shall be a coat hook installed at the top of each exterior cab handrail, for hanging of coats, turnout gear, etc.

CAB DOOR HANDRAILS

Two (2) 1.25" diameter knurled stainless steel handrails shall be provided on the inside of the rear crew doors just above the windowsill.

MIRRORS

Two (2) Lang Mekra 300 Series smooth chrome plated Aero style main and convex mirrors shall be installed on each side of the vehicle. The main mirror shall be 4-way remote adjustable with heat, 7" x 16" 2nd surface chromed flat glass. The convex shall be 6" x 8" 2nd surface chromed 400 mm radius glass. Each mirror housing assembly shall be constructed of lightweight textured chrome ABS with on truck glass and housing back cover replacement. In the event the mirror breaks the glass shall be replaceable in (3) minutes or less. The glass shall include a safety adhesive backing to keep broken glass in place. The mirror assembly shall be supported by a "C" loop bracket constructed of polished stainless steel tube utilizing two point mounting reducing vibration of mirror glass during normal vehicle operation. The lower section of the holder shall include a spring loaded single detent position 20 degrees forward with easy return to operating position without refocusing.

GRILLE

The front of the cab shall be equipped with a raised, box structured, polished stainless steel grille with sufficient area to allow proper airflow into the cooling system and engine compartment. Plastic chrome plated grilles shall not be acceptable.

LOWER GRILLE

The front of the cab shall be equipped with a polished stainless steel lower grille with custom laser engraved design per customer specifications. The lower grille shall also be backlit with LEDs. Color shall be specified by customer. The design shall be designed to allow proper airflow into the cooling system and engine compartment. Plastic chrome plated lower grille shall not be acceptable.

BUMPER

There shall be a 12" high double rib polished stainless steel wrap-around bumper provided at the front of the apparatus. Laser cut perforated grilles shall be incorporated into the bumper and located at the outboard section of the bumper for the air horns and at the center for the siren speaker. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x 10" x 70" carbon steel. A gravel shield shall be provided, constructed of .188" aluminum diamond plate. The bumper extension shall be approximately 12".

BUMPER SIDES

The sides of the bumper shall be finished with diamond plate.

AIR HORNS

Two (2) Grover 2040 Stuttertone rectangular, chrome plated, air horns shall be provided.

LANYARD CONTROL FOR AIR HORNS

The air horns shall be activated by a split "Y" lanyard in cab ceiling.

ELECTRONIC SIREN

One (1) Federal Signal PA-300 electronic siren shall be installed at the cab instrument panel complete with noise canceling microphone.

The electronic siren shall be wired through the steering wheel button. A selector switch shall be provided on the instrument panel to switch between functions.

MOMENTARY SWITCH

A momentary switch for the electronic siren shall be provided on the officer's side dash.

SIREN SPEAKER

One (1) Cast Products SA4201-5-A 100 watt weatherproof siren speaker shall be provided and wired to the electronic siren.

SPEAKER MOUNTING

The electronic siren speaker(s) shall be installed behind the main cab grille.

FEDERAL Q2B SIREN

There shall be a Federal Q2B-NN siren installed in the center of the cab grille. The siren shall be securely mounted and activated by means of a solenoid and shall include a brake.

FOOT SWITCH, DRIVER'S SIDE

A foot switch for the mechanical siren shall be provided on the driver's side.

FOOT SWITCH, OFFICER'S SIDE

A foot switch for the mechanical siren shall be provided on the officer's side.

CAB EXTERIOR LIGHTING

Exterior lighting and reflectors shall meet or exceed Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements.

HEADLIGHTS

The front low and high beam headlights shall be halogen type, rectangular shaped, quad style installed in the lower portion of custom square shaped stainless steel housings on the front of the cab. Each housing shall have an LED strip running light installed horizontally in the center of the housing above the headlights. The upper portion of each housing shall accommodate a forward-facing turn signal in the outboard location and a warning light in the inboard location.

HEADLIGHT FINISH

The interior components of the headlights shall have a chrome finish.

FRONT TURN SIGNALS

There shall be two (2) Whelen 600 series Model 60A00TAR LED arrow turn signal lights mounted one (1) each side above the headlights.

CAB INTERIOR

The metal surfaces of the cab interior shall be coated and sealed with MultiSpec gray speckle, urethane modified, mar resistant paint. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear.

The front and rear headliners, as well as the rear cab wall, shall be finished in Gray-Black Durawear covered padded panels.

INTERIOR DOOR PANELS

The interior of the cab entry doors shall have a 304 brushed stainless steel scuff plate, contoured to the door, from the door window sill down.

REFLECTIVE MATERIAL, CHEVRON STRIPING, INTERIOR CAB DOORS, ORAFOL REFLEXITE

The apparatus shall have reflective Orafol Reflexite Chevron striping affixed to the inside of each cab door. The striping shall be plainly visible to oncoming traffic when the doors are in the open position.

CAB FLOOR COVERING

The cab interior floor shall be covered with a 5/16" thick, gray rubberized material to provide a rugged but cosmetically pleasing stepping surface throughout the cab. The floor covering shall provide superior durability and resistance against foreign objects as well as normal wear and tear.

ENGINE ENCLOSURE (SMALL PROFILE)

An integral, formed aluminum and composite engine enclosure shall be provided. The engine enclosure shall be contoured and blended in an aesthetically pleasing manner with the interior dash and flooring of the cab. The enclosure shall be kept as low as possible, to maximize space and increase crew comfort.

The enclosure shall be constructed from 5052 H2 aluminum plate and GRP composite materials, providing high strength, low weight, and superior heat and sound deadening qualities.

Additionally, the underside of the engine enclosure shall be coated in with a ceramic spray on insulation and sound control. This coating is an environmentally-friendly coating that is applied seamlessly and rapidly while providing superior thermal insulation and protection against vibration and noise, and will prevent future corrosion from forming by sealing the substrate. NO EXCEPTIONS

ENGINE ENCLOSURE COVERING

The top of the engine enclosure shall be covered with heavy duty, gray polyurethane blended coating. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear as well as sound deadening and insulation.

TOOL MOUNTING PLATE

There shall be a 3/16" smooth aluminum plate installed on the engine enclosure between the driver and the officer for use in mounting of equipment. The mounting plate shall feature beveled edges on the front and sides for a finished appearance. The plate shall be coated with the same finish as the engine enclosure and shall be secured to the engine cover with screws for easy replacement.

ENGINE HOOD LIGHT

A work light shall be installed in the engine enclosure with an individual switch located on the base of the light.

WORK SURFACE

There shall be a flat work surface in front of the officer's seat.

Antenna

One customer supplied two way radio antenna shall be installed and cable ran to the lower center console.
CHASSIS WIRING- Hard Wired

All chassis wiring shall have XL high temperature crosslink insulation. All wiring shall be color-coded, and the function and number stamped at 3" intervals on each wire. All wiring shall be covered with high temperature rated split loom for easy access to wires when trouble shooting. All electrical connectors and main connectors throughout the chassis shall be treated to prevent corrosion.

MASTER ELECTRICAL PANEL

The main chassis breaker panel shall be wired through the master disconnect solenoid and controlled by the three-position ignition rocker switch. The breaker panel shall be located in front of the officer on the interior firewall and shall be protected by a removable aluminum cover. The cover shall have an aluminum notebook holder on the exterior face accessible to the officer. The cover shall be painted with a durable finish to match the interior of the cab and shall be secured with two (2) thumb screws.

The breaker panel shall include up to 22 ground switched relays with circuit breaker protection. An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere relays and one (1) 70-ampere relay shall be provided for cab light bar and other electrical items. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Up to two (2) additional relay boards with circuit breaker protection shall be provided for additional loads as required. Each board shall contain four (4) relays. The relay boards shall be configured to trip with input from switch of positive-negative or load manager by moving the connector on the board (no tools required).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to twenty-three (23) additional automatic reset circuit breakers for non-switched loads that are remotely switched (ie: heater fans, hood lights, etc.) shall be provided.

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutsch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is controlling.

INSTRUMENT PANEL

The main dash shroud, which covers the area directly in front of the driver from the doorpost to the engine hood, shall be constructed of vacuum formed ABS material with scorpion texture. The dash shall be a one-piece hinged panel that tilts outward for easy access to service the internal components. The gauge panel shall be constructed with a .125" aluminum panel, covered with a scratch resistant reverse printed and laminated poly carbonite.

The gauges shall be AMETEK Vehicular Instrumentation Systems (VIS), Next Generation Instrumentation System (NGI) with built-in self-diagnostics and red warning lights to alert the driver of any problems. All gauges and controls shall be backlit for night vision and identified for function. All main gauges and warning lights shall be visible to the driver through the steering wheel.

MASTER BATTERY & IGNITION SWITCH

The vehicle shall be equipped with a keyless ignition, with a three (3)-position Master Battery rocker switch, "Off/ACC/On" and a two (2)-position Engine Start rocker switch, "Off/Start".

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One control shall be for regeneration and one control shall be to inhibit engine regeneration. These shall be located below the steering wheel in the kick panel.

INSTRUMENTATION & CONTROLS

Instrumentation on dash panel in front of the driver:

Tachometer/hourmeter with high exhaust system regeneration temperature, and instrument malfunction indicators

Speedometer/odometer with built in turn signal, high beam, and re-settable trip odometer

Voltmeter

Diesel fuel gauge

DEF (Diesel Exhaust Fluid) gauge

Engine oil pressure

Transmission temperature

Engine temperature

Primary air pressure

Secondary air pressure

Indicators and warning lights in front of the driver:

Parking brake engaged

Low air with buzzer

Antilock brake warning

Check transmission

Transmission temperature

Upper power indicator

Seat belt

Engine temperature

Low oil indicator

Low voltage indicator

Air filter restriction light

Low coolant indicator

High idle indicator

Power on indicator

Check engine

Stop engine

Check engine MIL lamp

- DPF indicator
- High exhaust temperature
- Wait to start

Other indicator and warning lights (if applicable):

- Differential locked
- PTO (s) engaged
- Auto-slip response
- Retarder engaged
- Retarder temperature
- ESC indicator

Controls located on main dash panel in front of the driver:

- Master power disconnect with ignition switch
- Engine start switch
- Headlight switch
- Windshield wiper/washer switch
- Differential lock switch (if applicable)
- Dimmer switch for backlighting

Controls included in steering column:

- Horn button
- Turn signal switch
- Hi-beam low-beam switch
- 4-way flasher switch
- Tilt-telescopic steering wheel controls

CENTER CONTROL CONSOLE

There shall be an ergonomically designed center control console. The console shall be constructed of 1/8" smooth aluminum and shall be mounted on the engine hood between the driver and officer. The console shall have a durable coating to match the color of the engine hood covering and shall feature surfaces on each side that are contoured to face the driver and the officer for easy viewing and accessibility. The switches and other customer specified electrical items shall be mounted in removable 1/8" smooth aluminum panels with a black wrinkle finish. The console shall have an aluminum lift-up lid with quick release latch. The lid shall be held in the open position with a gas strut to allow for easy access and serviceability.

Controls located in the console conveniently accessible to the driver:

- Transmission shifter
- Pump shift control with OK TO PUMP and PUMP ENGAGED lights
- Remote mirror control

Illuminated rocker switches to control high idle, Jacob's brake, siren/horn, siren brake, master emergency, and other customer specified components

12V power point (if applicable)

Controls located in the console conveniently accessible to the driver and the officer (center):

Parking brake control with a guard to prevent accidental engagement

Controls located in the console conveniently accessible to the officer:

Illuminated rocker switches to control customer specified components that are easily reachable to the officer and do not allow for compromise of the driver's view, and eliminate the need for foot switches

Surface to recess siren head, radio head, or other desired items as space permits

12V power point (if applicable)

Driving compartment warning labels shall include:

HEIGHT OF VEHICLE

OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION

DO NOT USE AUXILIARY BRAKING SYSTEMS ON WET OR SLIPPERY ROADS

EXIT WARNINGS

Additional labels included:

COMPUTER CODE SWITCH

ABS CODE SWITCH

FLUID DATA TAG

CHASSIS DATA TAG

OVERHEAD CONTROL CONSOLE

An ergonomically designed overhead console shall be provided above the driver and officer, running the full width of the cab. The overhead console shall be constructed from 1/8" aluminum plate and shall be painted with a durable finish to match the inside of the cab. There shall be seven (7) removable 1/8" smooth aluminum plates with a black wrinkle finish to house switches and other electrical items.

Directly above the driver there shall be two (2) panels with no cutouts, unless otherwise specified by the customer.

There shall be a panel located to the right of the driver that shall be designated for defroster, heat, and air conditioning controls (if specified).

The center overhead panel shall be designated for up to seven (7) door ajar indicators. Upon releasing the apparatus parking brake, one or more of these lights shall automatically illuminate (flash) when any of the following conditions occur that may cause damage if the apparatus is moved: cab or compartment door is open; ladder or equipment rack is not stowed; stabilizer system deployed; any other device has not been properly stowed.

There shall be a panel to the left of the officer as well as two (2) directly above the officer. These panels shall have no cutouts, unless otherwise specified by the customer.

ENGINE WARNING SYSTEM

An engine warning system shall be provided to monitor engine conditions such as low oil pressure, high engine temperature and low coolant level. Warning indication shall include a STOP ENGINE (red) light with audible buzzer activation and a CHECK ENGINE (amber) light

Note: (Some engine configurations may also include a fluid warning light.)

There shall be a master information light bar with 24 lights located across the center of the dash panel that covers up to 24 functions. These are defined under Indicators and Warning Lights above.

PUMP SHIFT MODULE

A pump shift module with indicating lights shall be located within easy reach of the driver. A gear lockup shall be provided to hold the transmission in direct drive for pump operation.

PROGRAMMABLE LOAD MANAGER

Load manager shall have the ability to sequence loads on and off. The Super Node II has twenty-four (24) inputs and twenty-four (24) outputs. Eighteen (18) are positive polarity outputs and six (6) are ground polarity outputs. It shall also be able to establish a 8 priority levels to shedding loads when the vehicle is stationary, starting at 12.8 volts lowest priority load to be shed, then respectively at 12.7, 12.5, 12.3, 12.1, 11.9, 11.5 and never shed volts DC. An output is shed (turned OFF) when the system voltage drops below the designated priority level's shed voltage for thirty (30) seconds. If the voltage has dropped below multiple priority level shed voltages then each higher priority level will shed before the lower priority levels. An output is unshed (turned back ON) when the system voltage rises above the designated priority level's unshed voltage for ten (10) seconds. If the voltage has risen above multiple priority level unshed voltages then each lower priority level will unshed before the upper priority levels.

MASTER SWITCH

All outputs can be tied or not tied to the stage switch. In fire apparatus this switch is typically referred to as the master switch. The state of the stage switch is controlled by Utility Module output memory space 3. When this output is active the stage switch is active. Any output tied to the stage switch will be OFF if the stage switch is not active regardless of the output's multiplex equation. Set an output's to be tied to the stage switch by checking the stage switch box in its "Output Port Load Settings" under the "Settings" tab. The name of the stage switch can be changed from the standard "stage" to anything desired by modifying the text in the "Output Port Load Settings" area.

AUTOMATIC HIGH IDLE ACTIVATION

The Utility Module's high idle request (input memory space 2) is activated when the system voltage drops below the high idle threshold (12.8 volts standard or 25.6 volts if 24 volt load management is enabled) for 8

seconds or longer AND load management has been enabled (Utility Module output memory space 1 is active). The high idle request will remain active as long as the voltage remains below the voltage threshold and for 3 minutes after the system voltage rises above the voltage threshold. High idle can be canceled by activating the Utility Module's high idle cancel (output memory space 0).

HIGH IDLE

The engine shall have a "high idle" switch on the dash that shall maintain an engine RPM of 1,000. The switch shall be installed at the cab instrument panel for activation/deactivation. The "high idle" mode shall become operational only when the parking brake is on and the truck transmission is in neutral.

AUXILIARY POWER POINT

One (1) 12-volt 20-ampere auxiliary lighter socket type plug-ins, shall be provided in the cab.

USB POWER POINT

One (1) 12-volt dual port USB power point shall be provided in the cab.

CAB ACCESSORY FUSE PANEL

A fuse panel shall be located underneath the rear facing seat on the officer's side. The fuse panel shall consist of six (6) battery hot and six (6) ignition switch circuits. Each circuit shall be capable of 10-ampere 12-volt power and total output of 50-amps. The fuse panel shall be capable of powering accessories such as hand held spotlights, radio chargers, hand lantern chargers and other miscellaneous 12-volt electrical components.

POWER & GROUND STUDS, OVERHEAD COMMAND CONSOLE

There shall be a set three (3) threaded power studs provided in the cab's overhead Command Console for future installation of two-way radios.

The studs shall be wired as follows:

- One (1) 12-volt 60-amp, direct to the battery
- One (1) 12-volt 30-amp controlled by the ignition switch
- One (1) 12-volt 125-amp ground

POWER & GROUND STUDS, LOWER COMMAND CONSOLE

There shall be a set three (3) threaded power studs provided in the cab's lower Command Console for future installation of two-way radios.

The studs shall be wired as follows:

- One (1) 12-volt 60-amp, direct to the battery
- One (1) 12-volt 30-amp controlled by the ignition switch
- One (1) 12-volt 125-amp ground

VEHICLE DATA RECORDER

An Akron / Weldon vehicle data recorder as required by the 2009 edition of NFPA 1901 shall be installed. Vehicle data shall be sampled at the rate of 1 second per 48 hours, and 1 minute per 100 engine hours.

Free software is available to allow the fire department to collect the data as needed.

LIGHTING CAB INTERIOR

Interior lighting shall be provided inside the front of the cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens. One light shall be located over each the officer and driver's position. The lights shall also activate from the open door switch located in each cab doorjamb.

LIGHTING CREW CAB INTERIOR

Interior lighting shall be provided inside the crew cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens shall be provided. The lights shall also activate from the open door switch located in each cab doorjamb.

Hand Held Spot Light

A Optronics KB-4003 Hand Held Spotlight shall be included and mounted on breaker panel in front of the officers seat.

HEATER/DEFROSTER/AIR CONDITIONER

There shall be a minimum 65,000 cool BTU and 65,000 heat BTU single unit, heater/air conditioner mounted over the engine cover. The unit shall be mounted in center of the cab on the engine hood/enclosure. Unit shall have a shutoff valve at the right side of the frame, next to the engine. Airflow of the heater/air conditioner shall be a minimum 1200 CFM. To achieve maximum cooling, a TM-21 Compressor (10 cu. in.) will be used.

The defroster/heater shall be a minimum of 35,000 BTU and shall be a separate unit mounted over the windshield. There shall be eight (8) louvers/diffusers to direct to windshield and door glass. Airflow of the defroster/heater shall be a minimum 350 CFM. The unit shall be painted Zolatone greystone to match the cab ceiling.

The condenser shall be roof mounted and have 65,000 BTU rating. The unit shall include three fan motors. Airflow of the condenser shall be a minimum 2250 CFM. (This roof-mounted condenser shall work at full rated capacity at an idle with no engine heat problems.)

HEATER/DEFROSTER/AIR CONDITIONING CONTROLS

The heater/defroster/air conditioning shall be located in the overhead console in the center of the apparatus cab within reach of the driver and officer. The controls shall be illuminated for easy locating in dark conditions. The controls shall be located in such a way that the driver will not be forced to turn away from the road to make climate control adjustments. Control of all heater/defroster/air conditioning functions for the entire apparatus cab shall be achieved through these controls.

FLOORBOARD HEATING DUCT

There shall be ductwork to the floor of the cab, facing forward to provide heat for the front of cab floor area.

DEFROSTER DIFFUSER

A molded diffuser made of durable ABS plastic ductwork system shall be provided. It shall be form fitted and shall attach to the cab's overhead defroster unit to provide temperature controlled air to the windshields. Air flow of up to 280 cfm is balanced and directed across the entire windshield for optimum defrosting capability in all types of weather.

TOOL MOUNTING PLATE

There shall be a 3/16" smooth aluminum plate installed on top of the heat/ air conditioning unit for use in mounting of equipment. The plate shall measure approximately 25" wide x 19.5" long and shall be spaced up 1". The mounting plate shall feature beveled edges on the front and rear for a finished appearance. The

plate shall be coated with the same finish as the heat/air conditioning unit and shall be secured with screws for easy replacement.

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted in the cab ceiling, directed at the driver's side windshield. The fan shall be activated by a 3-position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off.

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted in the cab ceiling, directed at the Officer's side windshield. The fan shall be activated by a 3-position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off. The fan shall be silver.

DRIVER'S SEAT

A H.O. Bostrom Sierra high back ABTS seat with air suspension shall be provided for the driver. The seat shall be equipped with a red 3-point shoulder harness with lap belt. The seat shall have fore/aft adjustment and shall be upholstered with heavy duty Vinyl material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

OFFICER'S SEAT

An H.O. Bostrom Tanker 350 ABTS SCBA seat shall be provided for the officer. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Vinyl material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

UNDER SEAT STORAGE COMPARTMENT

There shall be an open storage area under the officer's seat, accessible from the front. The storage area shall be approximately 19.5" wide x 14.375" high x 21.75" deep. The lower rear portion of the compartment shall be tapered to accommodate the wheel well and wiring chase. The opening shall be approximately 15.5" wide x 10.5" high.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

EMS CABINET, REAR FACING

There shall be a cabinet constructed of .125 aluminum plate and painted to match the interior of the cab. The cabinet dimensions shall be approximately 21" wide x 22" deep x 39" high, or biggest compartment to eliminate dead space. The cabinet shall come complete with a locking roll up door and two adjustable shelves. Strip lighting shall be provided in the cabinet. The location of the cabinet shall be in place of the rear facing crew seat behind the driver.

EMS CABINET, REAR FACING

There shall be a cabinet constructed of .125 aluminum plate and painted to match the interior of the cab. The cabinet dimensions shall be approximately 21" wide x 18" deep x 39" high or biggest compartment to eliminate dead space. The cabinet shall come complete with a locking roll up door and two adjustable shelves. Strip lighting shall be provided in the cabinet. The location of the cabinet shall be in place of one of the rear facing crew seats behind the officer.

CREW SEAT – DRIVER'S SIDE, FORWARD FACING, INBOARD

One (1) H.O. Bostrom Tanker 300CT ABTS SCBA flip-up base seat shall be installed in the driver's side forward-facing inboard position. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Vinyl material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – OFFICER’S SIDE, FORWARD FACING, INBOARD

One (1) H.O. Bostrom Tanker 300CT ABTS SCBA flip-up base seat shall be installed in the officer’s side forward-facing inboard position. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Vinyl material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

SEAT UPHOLSTERY COLOR

The cab seat upholstery shall be black in color.

SCBA BRACKETS

Each SCBA seat in the cab shall feature an H.O. Bostrom SecureAll self contained breathing apparatus (SCBA) locking system. The seat back shall include a bracket which shall be capable of storing most U.S. and international SCBA brands and sizes while in transit or for storage. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters; adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

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

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

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

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

SEAT BELT WARNING SYSTEM

An Akron / Weldon seat belt warning system shall be provided, and shall monitor each seating position. Each seat shall be supplied with a sensor that, in conjunction with the display module located on the dash, shall determine when the seat belt was fastened and if the seat is occupied. An icon shall represent that the seat is properly occupied. An audible and visual alarm shall be activated if the seat is occupied and/or the belt is not fastened in the proper sequence.

CREW SEAT COMPARTMENT

A compartment shall be provided under the forward facing crew seats on the back wall of the cab. The compartment shall be full through, with an access door on each side, accessible from the side of the crew cab doors.

FIRE PUMP HALE QMAX XS 1750 GPM

Fire pump shall be midship mounted. The fire pump shall be of the double suction single stage centrifugal type, carefully designed in accordance with good modern practice.

The pump shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI.

The pump body shall be horizontally split, on a single plane, casing type with removable lower casing for easy removal of the entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in the chassis.

All moving parts in contact with water shall be of high quality bronze or stainless steel. Easily replaceable bronze labyrinth wear rings shall be provided. Discharge passage shall be designed to accomplish uniform pressure readings as the actual pump pressure. The rated capacity of the fire pump shall be 1750 gallons per minute in accordance with NFPA# 1901.

The pump shaft shall be rigidly supported by three bearings for a minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the drive unit). The

sleeve bearing shall be lubricated by a force fed, automatic lubrication system, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty type, deep groove ball bearings and shall be splash lubricated.

PUMP TRANSFER CASE – G SERIES

The drive unit shall be designed of ample capacity for lubricating reserve and to maintain the proper operating temperature. Pump drive unit shall be of sufficient size to withstand up to 16,000 lbs. ft. torque of the engine in both road and pump operating conditions.

The gearbox drive shafts shall be heat treated chrome nickel steel input and output shafts shall be at least 2-3/4" in diameter, on both the input and output shafts. They shall withstand the full torque of the engine in both road and pump operating conditions.

The engagement of the pump transmission shall be of such design so as to permit transfer of power from road to pump operation only after vehicle is completely stopped. The pump shift shall be air actuated from the cab and have both a green "Pump Engaged" light, and a green "O.K.-To-Pump" light. A third green light shall be provided on the pump operator's panel for "Throttle Ready".

The pump drive unit shall be cast and completely manufactured and tested at the pump manufacturer's factory.

PUMP SEAL

The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland must be a full circle threaded design to exert uniform pressure on the packing to prevent "cocking" and uneven packing load when it is tightened. It shall be easily adjustable by hand with a rod or screwdriver and requiring no special tools or wrenches. The packing rings shall be of a unique combination of braided graphite filament and braided synthetic packing and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

PUMP ANODE

A Hale pump anode kit assembly # 529-0050-00-0 shall be provided and installed in the pump body. A minimum of two (2) anodes shall be installed one (1) in the suction side and one (1) in the discharge side of the pump.

PUMP TEST & CERTIFICATION

The pump shall be tested and certified by Mistras Group, Inc., a third party independent testing agency, in accordance with NFPA 1901. A 3 hour pumping test from draft shall be conducted consisting of 2 hours of continuous pumping at 100% of rated capacity at 150PSI net pump pressure, followed by ½ hour of continuous pumping at 70% of rated capacity at 200PSI net pump pressure, and ½ hour of continuous pumping at 50% of rated capacity at 250PSI net pump pressure). The testing shall also include a pressure control system test, priming system test, vacuum test, a gauge/flowmeter test, and a pumping engine overload test. If the apparatus is equipped with a water tank, the water tank-to-pump test shall also be included.

AUXILIARY COOLER

An auxiliary cooler shall be furnished to provide additional cooling to the engine under extreme pumping conditions. Water from the pump is to be piped to the coils of the heat exchanger allowing the engine fluid to be cooled as required.

PUMP CONNECTIONS

All suction and discharge lines (except pump manifolds) 1" and larger shall be heavy-duty stainless steel pipe. Where vibration or chassis flexing may damage or loosen piping or where a coupling is necessary for servicing, a flexible connection shall be furnished. All lines shall be drained by a master drain valve or a separate drain provided at the connection. All individual drain lines for discharges shall be extended with a 90 degree fitting in order to drain below the chassis frame. All water carrying gauge lines shall utilize nylon tubing.

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with a check valve. The 3" tank to pump line shall run from a bottom sump into the 3" valve. To prevent damage due to chassis flexing or vibration, a short 3" flexible rubber hose coupling shall be used to connect the tank to the intake valve.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

TANK FILL

A 2" tank fill line shall be provided, using a quarter turn full flow ball valve controlled from the pump operator's panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

PRESSURE GOVERNOR

Apparatus shall be equipped with a Class1 Pressure Governor that is connected to the Electronic Control Module (ECM) mounted on the engine. The Governor will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's data for optimal resolution and response.

Programmable presets for RPM and Pressure settings shall be easily configurable using the menu structure. Engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all shall be provided.

INTAKE RELIEF

There shall be a Task Force Tips A1860 intake relief valve installed on the intake side of the pump. The surplus water shall be discharged away from the pump operator and terminate with Male NST hose thread. System is field adjustable.

6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the left side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

2.5" LEFT SIDE INLET

One 2.5" gated inlet valve shall be provided on the left side pump panel. The valve shall be supplied with chrome plate female swivel, plug, chain, and removable strainer. The valve shall attach directly to the suction side of the pump with the valve body behind the pump panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the right side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

2.5" RIGHT SIDE INLET

A 2.5" gated inlet valve shall be provided on the right side pump panel. The valve shall be supplied with chrome plate female swivel, plug, chain, and removable strainer. The valve shall attach directly to the suction side of the pump with the valve body behind the pump panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

DISCHARGE #1 - LEFT

The discharge in position #1 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

DISCHARGE #2 - LEFT

The discharge in position #2 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

DISCHARGE #3 - RIGHT

The discharge in position #3 on the right side of the apparatus shall include the following features.

A 3" discharge shall be provided on the right side of the apparatus.

VALVE, SLOW CLOSE

The valve shall be an Akron slow close type Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts.

The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

DISCHARGE #4 - RIGHT

The discharge in position #4 on the right side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

2.5" REAR DISCHARGE

There shall be a 2.5" gated discharge piped to the right front of the hosebed. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 2.5" piping and a full flow 2.5" ball valve with the control at the pump operator's panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

DELUGE RISER

A 3" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be rigidly braced. The riser shall be gated and electrically controlled from the pump operators panel.

VALVE ACTUATOR- Electric

The valve shall be controlled by a Akron Electrical Operated Valve, Actuator, and controller located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

DECK GUN TERMINATION

A four-bolt compound flange shall be provided on top of the deck gun piping.

Deck Gun

Deck gun shall be a Akron 3440 Electric Operated with Stow and Remote. An Akron 1577 Sabre Electric Operated Nozzle shall be provided. The controller shall be mounted at the Drivers Pump Panel and located at best possible location.

CROSSLAY 2.5"

A single 2.5" crosslay hose bed shall be supplied, above the speedlays. The piping and valves shall be 2.5". The swivel shall be 2.5". The valve shall be push/pull controlled from the pump panel. Compartment shall hold 200' of 2 1/2" DJRL Hose.

SPEEDLAYS

Two (2) speedlays shall be provided at the front of the module. The piping and valves shall be 2", the swivels shall be 1.5". The valves shall be the "drop-out" style, push/pull controlled from the pump panel. One compartment shall hold 200 ft. of 1.75" double jacket hose and the other shall hold 200 ft. of 2" double jacket hose.

Each speedlay shall be provided with a poly, slide-in hose tray.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a Class 1 push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

The discharge shall be equipped with 2.5" Class 1 gauge. The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The case shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge shall be mounted adjacent to the corresponding water outlet.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

MASTER PUMP DRAIN

A multiport master drain valve shall be provided and plumbed to multiple locations on the main pump body. The valve assembly shall be clearly marked as the Master Drain.

DRAIN VALVES LIFT UP STYLE

Vertical lift up style, quarter turn style drain valves shall be provided for each suction inlet, or discharge outlet as specified. Each drain shall be clearly marked and color coded to match the corresponding suction of discharge.

PUMP AND GAUGE PANELS

The pump controls and gauges shall be located at the left side of the apparatus. The pump and gauge panels shall be flush mounted on the aluminum extruded pump module framework.

Pump panels on both sides shall be easily removable. The gauge and control panels shall be two separate panels for ease of maintenance. The upper gauge panel shall be hinged with a full-length stainless steel hinge held closed with a 1/4-turn latch. There shall be an access door located over the right side pump panel. This door shall have a stainless steel hinge and latching mechanisms.

The right side pump panel shall be vertically hinged to allow the panel to move away providing complete access to the pump compartment.

The control panel shall be laid out in a user-friendly manner. All valve controls shall have the corresponding discharge gauge located immediately adjacent to control handle to allow operator to view the discharge pressure without searching the panel.

PANEL FINISH

The panels shall be constructed of 14 gauge brushed stainless steel for maximum protection against abrasion caused during normal use.

COLOR CODING

Each discharge valve control, outlet, and corresponding line gauge shall be color-coded.

Pump Panel Air Connection

A Female (Quick Connector Style A) Air Connector shall be installed at the drivers side pump panel and be supplied with 25' of air hose.

PUMP PANEL LIGHTS LED

The pump panel controls and gauges shall be illuminated by a minimum of two (2) LED lights, controlled at the pump panel.

PUMP PANEL GAUGES AND CONTROLS

The following shall be provided at the pump operator's panel:

- Two (2) certified laboratory test gauge outlets.
- Pump primer control.
- Master drain control and additional drains as needed.
- Tank fill and pump cooler valve controls.
- Tank to pump valve control.
- Pump capacity rating plate.
- All discharge controls.
- Two (2) master 4-1/2" pump gauges.
- 2-1/2" Gauges for all 1-1/2" and larger discharge lines.

PRIMING SYSTEM

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. A single panel mounted control will activate the priming pump and open the priming valve to the pump. The priming system shall have a five year warranty.

(1) PRIMER BUTTON - MAIN SUCTION

A single panel mounted control will activate the priming pump and open the priming valve to the pump.

COMPRESSION FITTINGS ON AIR SYSTEM

Compression style fittings shall be provided for the following locations within the pump module:

- Front Suction Drain (if applicable)
- Pump Shifter (standard)

- Pump Panel Air Outlet (if applicable)

All other air line fittings within the pump module shall be push-on style.

AIR HORN BUTTON

A push button switch shall be provided on pump operators panel to activate the air horns.

4.5" MASTER GAUGES

Two (2) 4-1/2" Class 1 master gauges shall be provided. Each gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40-degrees Fahrenheit. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing, and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauges shall be mounted next to each other adjacent to crosslay area at the right upper section of the pump operator's panel. The intake gauge shall be to the left of the discharge gauge.

WATER TANK GAUGE

A Class1 Intelli-Tank water level gauge shall be provided. The gauge shall feature wide-angle viewing and four (4) ultra-bright LED's for high visibility even in direct sunlight. Water level sensing shall be through a pressure transducer, and capable of indicating nine (9) accurate levels.

WATER TANK

The water tank shall be constructed of polypropylene sheet stock. This material shall be non-corrosive, stress relieved thermoplastic and U.V. 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.

The tank shall be constructed with transverse and longitudinal swash partitions. 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 shall interlock with one another and welded to each other as well as to the walls and floor of the tank.

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of ½" thick polypropylene and shall be a minimum dimension of 8"x 8" outer perimeter. The tower shall have a ¼" thick removable screen and a hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum I.D. of 4" that is designed to run through the tank, and shall be piped behind the rear wheels where specified by the purchaser so as to maximize traction.

There shall be one (1) sump standard per tank. The sump shall be constructed of ½" black polypropylene and 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. The sump shall have a minimum 3" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination cleanout and drain. The tank shall have an anti-swirl plate above the dip tube.

There shall be two (2) standard tank outlets: one for tank to pump suction line and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank. All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

The tank shall rest on the body cross members to adequately support the water tank per the tank manufacturer's specifications.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum thickness ¼". Additionally, the tank shall be supported around the entire bottom outside perimeter and captured front and rear as well as side to side to prevent tank from shifting during vehicle operation.

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

The tank shall come with a lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty.

WATER TANK

The water tank shall have a capacity of 500 U.S. gallons.

APPARATUS BODY

The body shall be constructed of 3/16" #5052 aluminum sheet and #3003 bright aluminum diamond plate and structural aluminum extrusions. The entire body shall be of the modular aluminum design to allow for

proper flexing of the truck chassis. A special insulator material shall be used where aluminum and steel are in contact. The body shall be custom built and engineered for proper load distribution on the chassis.

The body compartments shall be designed as separate units using 3003H14 3/16" aluminum plate for the floors. Compartment panels shall be sealed by stitch welding.

The exterior compartment corners shall be formed by an extruded aluminum alloy (6061-T6) frame with a nominal thickness of .188". These extruded sections shall incorporate 1" recessed continuous bottom door seal to allow unobstructed, sweep-out floors in all compartments.

The front, top, and rear surfaces of the body shall be covered with aluminum .125" Treadplate. The compartment tops shall extend downward over the extrusions and form a continuous full-length drip molding.

The apparatus body and pump enclosure shall be separate modules that are not fastened together in any manner. This shall help prevent any cracking of body or pump enclosure.

Each compartment shall be properly vented with louvers.

REAR STEP COMPARTMENTATION

A1 - There shall be a compartment provided at the rear step. The compartment shall be approximately 40" wide x 37.38" high x 31" deep inside. The compartment shall be provided with a roll-up door.

COMPARTMENTATION LEFT SIDE

L1- There shall be a compartment ahead of the rear wheels approximately 40" wide x 66" high x 26" deep lower and 11.06" deep upper.

L2- There shall be a compartment above the rear wheels, approximately 59" wide x 36.5" high x 11.06" deep.

L3- There shall be a compartment behind the rear wheels approximately 40" wide x 66" high x 26" deep lower and 11.06" deep upper.

COMPARTMENTATION RIGHT SIDE

R1- There shall be a compartment ahead of the rear wheels approximately 40.38" wide x 31.38" high x 26" deep.

R2- There shall be a compartment behind the rear wheels approximately 40.38" wide x 31.38" high x 26" deep.

BODY SUB-FRAME

The chassis shall be fitted with a sub-frame system. This system will provide additional structural support to the running boards and side compartments. A heavy-duty rear platform shall be constructed of the same material to support the rear compartments and rear step. The entire assembly will be attached to the chassis frame by a series of heavy-duty Huck bolts.

COMPARTMENT INTERIOR - L1

The L1 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - L2

The L2 compartment on the left side of the apparatus shall include the following features:

TILT DOWN DRAWER

A Slide-Master pull out drawer with 30 degree tilt down feature shall be provided and installed in the compartment. The drawer shall have a distributed load capacity of 250 lbs. and be capable of extending 90% of it's depth. The tray shall be fabricated of .188" aluminum plate and have a formed lip that measures 2".

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - L3

The L3 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT DIVIDER

There shall be a vertical divider/partition provided in a compartment as specified. The divider shall be constructed of .188" thick smooth aluminum plate. The top and bottom of the divider shall have a formed flange bolted to the interior of the compartment.

ADJUSTABLE VERTICAL SLIDE-OUT PANEL

There shall be an adjustable vertical slide-out tool board with a 250 lb. capacity supplied and mounted on unistrut tracks. Extra compartment lights shall be provided and located as needed to properly illuminate the compartment.

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - R1

The R1 compartment on the right side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - R2

The R2 compartment on the right side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

ADJUSTABLE ROLLOUT DRAWER

There shall be a 250 lb. capacity rollout drawer supplied and installed in a compartment. The drawer shall be approximately 3" deep and shall be mounted on adjustable tracks.

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - A1

The A1 compartment on the rear of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

600# SLIDE-MASTER TRAY

There shall be a Slide-Master pullout drawer provided and installed. The drawer shall have a distributed load capacity of 600 lbs. and be capable of extending 70% of its depth. The tray shall be fabricated of .188" aluminum plate and have a formed lip that measures 2".

COMPARTMENT MATTING

Turtle Tile interlock matting material shall be provided in the compartment.

UNISTRUT

Each compartment shall come equipped with 1.625" x .875" x .125" aluminum Unistrut channel. The Unistrut shall be securely fastened to the interior walls of the compartment.

ROLL-UP COMPARTMENT DOORS

The apparatus body shall be equipped with R.O.M Robinson Shutter doors. The door slats shall be double wall box frame, manufactured from anodized aluminum. The doors shall have the following features:

- Manufactured wholly in the United States.
- Concave individual slat design to prevent loose equipment from hindering door operation
- Co-Extruded stretch resistant inner seal between slats to prevent metal-to-metal contact and inhibit moisture and dust penetration.
- Interlocking swaged/dimpled end shoes shall be utilized to provide a tight fitting assembly and allow for easy removal in the event of damage.
- Effective counter balancing for ease of lifting and lowering the doors.
- One-piece side rail and track to provide an unobstructed slide area and reduce the risk of binding.
- Non-abrasive replaceable water and dust barrier to keep compartment equipment clean and dry.
- A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.
- A full width positive latch bar shall be operable with one hand, even with heavy gloves.

A door open indicator light shall be provided in the cab.

REAR COMPARTMENT DOOR

The rear compartment door shall be equipped with ROM brand roll-up door in a satin finish.

COMPARTMENT LIGHTING

Each compartment shall be equipped with two (2) LED light strips which shall provide a consistent pattern to illuminate to entire compartment.

HOSE BED

The hose bed shall be provided with aluminum slatted flooring radiused at the edges to prevent hose damage from sharp edges. Each hose bed floor section shall be removable for easy access to the water tank. The hose shall be capable of holding the following minimum loads and maximum distance from the ground is 64".

1000' of 5"

750' of 2 1/2"

750' of 2 1/2"

200' of 2 1/2"

HOSE BED COVER

There shall be a black nylon/vinyl hose bed cover for the main hose bed. The cover shall be capable of being securely fastened at the front, sides and rear with bungee cords with pull tabs.

HOSE BED DIVIDERS

The hose bed shall be divided by three (3) 3/16" aluminum partitions that are fully adjustable by sliding in tracks located at the front and rear of the hose bed. The dividers shall be located as needed.

BODY HANDRAILS

Handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails, shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange. Sufficient space shall allow for a gloved hand to firmly grip the rail. The rails shall be located in the following areas:

(Note: These are in addition to those previously mentioned in the cab section):

There shall be one (1) vertical handrail at rear of the body one each side of the rear compartment.

There shall be two (2) handrails mounted horizontally, above the pump panel, one (1) on each side as large as possible.

FRONT BODY STEPS

There shall be up to three (3) Innovative Control fold-down steps with integrated step lights mounted on each side of the front face of body to provide access to the top of the pump module and dunnage area.

The quantity and location of steps and handrails shall meet the Current NFPA 1901 pamphlet in effect at the time the apparatus is ordered.

REAR STEPS

The rear of the body shall be equipped with up to six (6) fixed steps. Each step shall measure 8" x 8" for clearance while climbing. Each step shall be offset from the one below. Thinly fabricated aluminum steps shall not be utilized.

The quantity and location of steps and handrails shall meet the Current NFPA 1901 pamphlet in effect at the time the apparatus is ordered.

RUB RAILS

The body shall be equipped with anodized aluminum channel style rub rails at the sides. Rub rails shall be spaced away from the body by 1/2" polymer spacers. The rub rails shall be polished to a bright finish.

ALUMINUM TREADPLATE

All load bearing aluminum treadplate running boards shall be .155 thick bright-annealed finish. Running boards and rear step edges shall be flanged down for added strength. Running boards shall also be flanged up to form kick plates. All non-load bearing aluminum shall be .125" thick bright annealed finish. In areas where aluminum treadplate shall function as a load-bearing surface, there shall be a heavy steel sub-structure. This structure shall consist of 3" channel and 1-1/2" angle welded support. This shall assure that there shall be no flexing or cracking of running boards. The aluminum shall be insulated from the steel by closed cell foam body barrier material.

Treadplate locations:

1. Skirting around front bumper.
2. The step at the cab entrance.
3. The jump seat steps.
4. The body header.
5. The running boards.
6. The rear step.
7. The top of the compartments.

8. The rear of the apparatus.
9. The rear fenders.

AIR BOTTLE COMPARTMENTS

There shall be four (4) SCBA bottle compartments located in the fender wells of the apparatus body, two (2) each side.

GROUND LADDERS

The apparatus shall be equipped with heavy duty, box type "I" beam rail, ground ladders. The ladders shall meet the requirements of NFPA 1931 to ensure proper design and that sufficient strength is available for the service intended. The ground ladders shall be constructed of aluminum with non-welded, field replaceable rung to rail connections to simplify field repairs and removable plated steel butt spurs for added strength. A full 1/2", non-rotting, poly rope shall be provided for easy ladder operation.

One (1) Alco-Lite PEL-24 24 ft. two-section aluminum extension ladder.

One (1) Alco-Lite PRL-14 14 ft. aluminum roof ladder.

One (1) Alco-Lite FL-10' 10 ft. folding ladder.

The ladders shall have lifetime Warranty against manufacturing defects.

LADDER RACK

The ground ladders shall be mounted above the right side compartments.

LICENSE PLATE BRACKET

A Cast Products LP0013 cast aluminum license plate bracket with LED light shall be provided at the rear of the apparatus.

BODY ELECTRIC SYSTEM

All body electrical wiring in the chassis will be XLP cross link-insulated type. Wiring is to be color-coded and include function codes every three (3) inches. Wiring harnesses will be routed in protective, heat resistant loom, securely and neatly installed. Two power distribution centers will be provided in central locations for greater accessibility. The power distribution centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays are utilized in circuits which amp loads are substantially lower than the respective component rating thus ensuring long component life. Power distribution centers will be composed of a system of interlocking plastic modules for ease in custom construction. The power distribution centers are function oriented. The first is to control major truck function and the second controls overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for future installations. All harnesses and power distribution centers will be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces will be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points will be mounted in accessible locations. Complete chassis wiring schematics will be supplied with the apparatus.

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. The wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

All harnesses shall be covered with moisture resistant loom with a minimum rating of 300 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable has a minimum rating of 289 degree Fahrenheit.

All harnesses are securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations use a method that provides a positive mechanical and electrical connection and are in accordance to the device manufacturer's instructions. No connections within the harness utilize wire nut, insulation displacement, or insulation piercing.

All circuits conform to SAE1292. All circuits are provided with low voltage over current protective devices. These devices are readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers are not used for ground connections.

BACK-UP ALARM

An Ecco model SA917 automatic self-adjusting electronic back-up alarm producing 87-112 db shall be installed at the rear between the frame rails. It shall operate whenever the transmission's reverse gear is selected.

STOP/TAIL/TURN/REVERSE LIGHTS

The rear stop/tail/turn/reverse lights shall be Whelen 600 series lights installed in chrome plated PLAST4V quad housings one (1) each side on the rear of the apparatus body. The stop/tail lights shall be LED model 60BTT located in the top position of the housing. The amber arrow turn signals shall be LED model 60A00TAR located below the stop/tail lights. The reverse lights shall be LED model 60C00WCR (maximum intensity) located below the turn signals. The bottom position of the housing shall accommodate a Whelen 600 series warning light.

LED ICC/MARKER LIGHTS

LED type ICC/marker lights shall be provided to meet D.O.T. requirements.

STEP LIGHTS

The pump module running board area shall be illuminated by Whelen 2G 4" diameter LED lights mounted one each side on the front of the body in chrome flanges.

LED strip lighting or individually mounted lights shall be provided at the rear of the body to illuminate all stepping surfaces based on the body style.

GROUND LIGHTING

The apparatus shall be equipped with lighting capable of illumination to meet NFPA requirements. Lighting shall be provided at areas under the driver and crew riding area exits and shall be automatically activated when the exit doors are opened. The ground lights shall be Truck-lite® LED model #44042C. Lighting required in other areas such as work areas, steps and walkways shall be activated when the parking brake is applied, provided the ICC lights are on.

REAR WORK LIGHTS

Two (2) Rigid Industries D2 Diffusion LED flood lights shall be provided. One (1) shall be mounted on each side on the upper rear of the apparatus body. The lights shall be activated by a switch inside the cab near the driver and also when the apparatus is placed in reverse.

OPTICAL WARNING SYSTEM

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way and the other mode shall signal that the apparatus is stopped and is blocking the right-of-way.

A momentary rocker switch shall be provided near the driver and labeled Master Emergency to energize all of the optical warning devices provided. A secondary momentary rocker switch shall be provided near the officer. All lights shall operate at not less than the minimum flash rate per minute as specified by NFPA.

UPPER LEVEL WARNING DEVICES

The upper level shall be divided into zones A (front), B (officer's side), C (rear) and D (driver's side).

Zone A (front) shall have one (1) Whelen Freedom IV 72" Model F4N7QLED light bar, with twelve (12) LED modules. The light bar shall have two (2) end red LED modules, two (2) corner red LED modules, six (6) forward-facing red LED modules and two (2) forward-facing white LED modules. The light bar shall have all clear outer lenses. The light bar shall be installed on the cab roof as far forward as possible with two (2) MK8H 5" cast aluminum risers.

OPTICOM

A Global Traffic Technologies 792H Strobe opticom emitter shall be provided and installed on the cab roof. The opticom shall be wired to a switch near the driver.

The opticom shall be interlocked with the parking brake so it will only work when brake is released.

Zone B (officer's side) shall be covered by the module from the light bar and the rear beacon.

Zone C (rear) shall have two (2) Whelen Model L31 LED beacons installed one (1) each side on the upper rear of the apparatus.

Zone D (driver's side) shall be covered by the module from the light bar and the rear beacon.

LOWER LEVEL WARNING DEVICES

The lower level shall be divided into zones A (front), B (officer's side), C (rear) and D (driver's side).

Zone A (front) shall have two (2) Whelen 600 series model 60*02F*R Super LED warning lights.

The lights shall be installed one (1) each side on the front of the cab in the headlight/warning light combo housings (inboard of the turn signals).

Zone B (officer's side) shall have two (2) Whelen 600 series model 60*02F*R Super LED warning lights and one (1) Whelen ION T-Series TLI* Super LED warning light.

The lights shall be installed one (1) near the front corner of the apparatus, one (1) near the rear axle, and one (1) near the rear corner of the apparatus.

Zone C (rear) shall have two (2) Whelen 600 series model 60*02F*R Super LED warning lights installed one (1) each side on the lower rear of the apparatus.

Zone D (driver's side) shall have two (2) Whelen 600 series model 60*02F*R Super LED warning lights and one (1) Whelen ION T-Series TLI* Super LED warning light.

The lights shall be installed one (1) near the front corner of the apparatus, one (1) near the rear axle, and one (1) near the rear corner of the apparatus.

TRAFFIC ADVISOR

One (1) Whelen TAL65 36" LED traffic advisor shall be installed at the rear of the apparatus. The advisor shall have six (6) amber LED light heads. A diamond plate lip shall be installed above the traffic advisor to protect it from hose couplings. The TACTL5 control head shall be mounted in a location specified by the fire department.

SCENE LIGHTS

A pair of Whelen M9 LED scenelights shall be installed and mounted on the rear of the apparatus. They are to be switched in the cab and also come on when the transmission is placed in reverse.

GENERATOR

The apparatus shall be equipped with a complete electrical power generation system. A Smart Power hydraulic 6.0 KW generator shall be provided and installed. The generator and wiring shall conform to present National Electric Codes as outlined in the National Fire Protection Association Standards.

The output of the generator shall be controlled by an internal hydraulic system. An electrical instrument gauge panel shall be provided for the operator to monitor and control all electrical operations and output. The generator shall be powered by a transmission power take off unit, through a hydraulic pump and motor. The generator shall be operable anytime that the apparatus engine is running and meeting the minimum range of 950 RPM's.

BREAKER BOX

A circuit breaker box shall be provided with eight (8) spaces for breakers which shall be provided as needed. All wiring shall be installed in liquid tight conduit.

BREAKER PANEL

The breaker panel shall be located in the L1 Compartment and shall meet all requirements set forth by the National Electrical Code and NFPA guidelines.

120-VOLT OUTLET

Four (4)- 120-volt outlets with weatherproof cover shall be provided. All 120 volt wiring shall be installed in liquid tight conduit. Two, one each side shall be located in the location where Tri-Pod lights are mounted. The other two to be located in the rear fender area, one each side.

Transfer Switch

An Automatic Transfer Switch shall be installed with the circuit panel and control all outlets connected to the shore line.

CORD REEL

There shall be a Hannay Model ECR1616-17-18 electric rewind cable reel furnished and mounted in the Dunnage Area above right side pump panel. The reel shall come complete with 150 feet of 10/3 Seoprene Water-resistant (SOW) yellow jacketed cable. A Hannay Type "C" roller assembly and HS-3 cable stop ball shall be provided.

FOUR WAY RECEPTACLE

An Akron (GFE) four-way receptacle box with light shall be provided and hard wired to the end of the cable. The box shall be securely mounted in the immediate area of the cord reel. The mounting shall be a fabricated aluminum bracket equipped with a Velcro strap to secure the box.

TRIPOD MOUNTED LED SCENE LIGHT

Two (2) Fire Research Spectra SPA642-K20-ON-603 tripod mounted LED scene light shall be provided. The lamp head shall operate at 120 volts DC, draw 2 amps, and generate 20,000 lumens of light. The fully extended tripod system shall exceed a height of 6 feet and be less than 3.5 feet when collapsed. Wiring shall extend from the pole bottom with a 4' retractile cord. The light shall be mounted at a fire department specified location and shall be controlled from a switch on the lamp head.

BROW MOUNTED LED SCENE LIGHT

One (1) Fire Research Spectra SPA811-J20 brow mounted LED scene light shall be provided. The lamp head shall operate at 240 volts AC, draw 1 amp, and generate 20,000 lumens of light. The light shall be mounted at the front brow of the cab and shall be controlled from a switch in the cab.

CORROSION REDUCTION POLICY

It is understood that fire apparatus will operate in harsh environments. The Bidder shall have in place a formal corrosion reduction program and detailed assembly procedures, designed for reducing and eliminating the possibility of corrosion. A formal program following the processes as set forth in ASTM B117, and is described below.

Frame Rails

The chassis frame rails shall be coated with a high performance, two component, reinforced inorganic zinc rich primer with a proven cathodic protection makeup preferably Cathacoat 302HB. The surface shall be clean and free of all salts, chalk and oils prior to application. Were the primer has been broken during the frame assembly process the area shall be touch up to reestablish the seal. Prior to finish paint a second primer Devran 201 shall be applied. Once the assembly of the frame is complete and the second primer is applied the entire assembly shall be covered with high quality top coat paint preferably Imron 5000 or equal.

Electro Plating

Steel and Iron brackets such as the pump module bracket shall be Zinc or cadmium plated to protect against corrosion. Plating shall be in accordance with ASTM B663.

Fasteners

In any area that a stainless steel screw or bolt head is to come in contact with aluminum or steel, painted or non-painted, the fastener shall have the underside of the head pre-coated with nylon. The nylon coating shall act as a barrier between the fastener head and the metal or painted surface.

Screw or bolt taped into the metal shall be pre-coated with a Threadlocker type material pre-applied on the threads.

When bolting together stainless steel the pan-head bolts with nylon coating under the head, a stainless washer with a rubber backing, and a Stover flange nut to secure the bolt, shall be utilized.

When mounting aluminum components such as a step to the apparatus body, stainless steel washers with rubber backing shall be used. All mounted components shall utilize barrier material between the two surfaces.

All rivet or huck type fasteners shall be of the same material being secured.

Whenever possible, holes shall be pre-drilled and taped when mounting components such as lights, steps, and hand rails prior to the paint process to reduce the corrosion opportunity. If a hole must be drilled into a previously painted surface, the paint barrier around the hole shall be re-established and a flange-type nutsert with a gasket under the flange shall be used.

When possible, the use of stainless trim screws shall be minimized. Structural tape and or adhesive shall be used were possible for mounting trim to the body or cab.

If a pre-treated screw or bolt is not available, hand applied Dynatex Boltlocker or Theadlocker shall be placed on the threads of the screw, bolt or nutsert. This will help seal threads from moisture and help prevent the fasteners from loosening. If lubricant is used when tapping the hole, the hole will be cleaned of lubricant and the shavings before applying.

Barrier Tape

Barrier tape shall be used on the backsides of all lights, trim pieces, or other components when bolting them to the apparatus; also when attaching stainless steel over an aluminum surface or when attaching aluminum treadplate to the stainless steel. All instances of dis-similar metals contacting each other require the addition of barrier tape between the metals where contact is made.

Before applying the tape, all metal surfaces shall be clean from oil or dirt with a 50/50 mix of alcohol and water or a similar solvent.

Gaskets

Gaskets shall be used under all snaps, loops and fasteners for such items as for hose bed covers. The paint seal shall be re-established around the mounting hole edges after drilling.

Rollup Doors

1 3/4" X 1/16" barrier tape shall be used on the frame opening to act as barrier between the aluminum door rail and the painted door opening surface.

Hinged Doors

Barrier tape shall be applied to the painted surface of the body and on the painted hinge side of the door.

Painting Steel

Steel shall be wiped of any oil residue, rust, and weld slag or smoke shall be removed. All surfaces shall be cleaned with solvent, primed, and then sprayed with a topcoat. After bolts are tightened to the proper torque, bolts shall be touched up with primer or cold galvanizing coating.

Mounting Emergency Lights and Options

All emergency lights, accessory mountings, Kussmaul covers, and 110 outlet boxes mounted to the body should be mounted with pre-coated Threadlocker and nylon under the head screws or bolts to minimize corrosion between dissimilar metals.

Electrical Grounding

Grounding straps shall be installed consisting of a minimum 2-gauge strap bolted to the chassis frame.

A ground cable from the cab to the right side frame rail

From the alternator to the right side frame rail

From the pump module frame to the right side truck frame.

Aerials: from the hydraulic and pump module framework.

From the pump mount to the truck frame rail.

From the body module to the right side truck frame.

Proper grounding will help eliminate grounding problems, and will reduce the possibility for electrolysis and corrosion to occur, as a result of impressed current be presented to the chassis. All electrical connection points shall be sprayed with electrical sealer as necessary.

SALT SPRAY TESTING

All fasteners and coatings have been chosen after extensive salt spray testing. Salt spray tests are used to confirm the relative resistance to corrosion of coated and uncoated metallic specimens, when exposed to a salt spray climate at an elevated temperature. Test specimens are placed in an enclosed chamber and exposed to a continuous indirect spray of neutral (pH 6.5 to 7.2) salt water solution, which falls-out on to the specimens at a rate of 1.0 to 2.0 ml/80cm²/hour, in a chamber temperature of +35C., steady state condition.

Method

Salt fog testing is performed by placing samples in a test cabinet that has been designed in accordance with Paragraph 4 (Apparatus) of ASTM B117 and operated in accordance with Paragraph 10 (Conditions) of ASTM B117.

A 5% salt solution, prepared by dissolving sodium chloride into water that meets the requirements of ASTM D1193 Specification for Reagent Water, Type IV is supplied to the chamber. At the time the samples are placed into test, the cabinet is pre-conditioned to the operating temperature of 35°C and fogging a 5% salt solution at the specified rate.

Orientation

The samples are placed at a 15-30 degree angle from vertical or tested in the "installed" position. This orientation allows the condensation to run down the specimens and minimizes condensation pooling. An important aspect of the test is the utilization of a free-falling mist, which uniformly settles on the test samples. This simulates a "real world" condition.

Test durations

Test durations are 500 hours, and the test cabinet will remain closed for the duration of the test.

PAINTING

All exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate shall be thoroughly cleaned and prepared for painting. All irregularities in painted surfaces shall be rubbed down and all seams shall be caulked before the application of the finish coat.

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure finish paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly. Both aluminum and steel surfaces to be painted shall be primed with a two (2)-component primer which is compatible with the finish coat. The apparatus shall be finish painted with a polyurethane base/clear system. "No Exception"

A barrier gasket/washer of "High Density Closed Cell Urethane Foam" shall be used behind all lights, handrails, door hardware and any miscellaneous items such as stainless steel snaps, hooks, washers and acorn nuts. The gaskets/washers shall be coated with pressure sensitive acrylic adhesive. All screws used to penetrate painted surfaces shall be pre-treated/coated under the head with nylon and the threads shall have pre-coat #80. This procedure shall be strictly adhered to for corrosion prevention and damage to the finish painted surfaces.

The following paint process shall be utilized:

Surface Preparation:

1. Wash surface thoroughly with mild detergent.
2. Clean and de-grease with Prep-Sol 3812S.
3. Sand and feather edge using 400 grit or finer on a dual action sander.
4. Remove sanding dust with a cleaner compatible with polyurethane base coat/clear coat final finish.

Substrate treatment:

1. Use a Metal Conditioner followed with a Conversion Coating product.

Priming:

1. Use a priming 615S pretreatment.
2. Use a self etching primer applied to achieve a 1.5 mil dft minimum.
3. Use Prime N Seal sealer compatible with polyurethane base coat.

Color Coat:

1. Apply polyurethane base coat 1-2 mil dft minimum.

Clear coat:

1. Apply polyurethane clear coat 2 mil dft minimum.

PAINT-TWO TONE CAB

The cab exterior surfaces shall be two (2) colors. The paint break line shall be at the bottom of the windshield.

PAINTED FRAME

The frame rails and body subframe shall be painted glossy black.

LETTERING

Forty (40) 3" 22KT Gold laminate goldleaf letters, with left hand shading and right hand outline to equal 3-5/8" letter, shall be provided.

Additional 11" letters shall be provided.

Customer supplied fire department emblems shall be installed on the cab doors, one each side.

CHEVRON STRIPING, REAR BODY OUTBOARD, ORAFOL REFLEXITE

The apparatus shall have 6" red and yellow reflective Orafol Reflexite Chevron style striping affixed to the outboard rear body panels. The striping will be set in a manner to have the effect of an inverted "V" shape. The stripe will travel low to high from the outside to the inside.

Striping

There shall be Three (3), 3" Scotchlite Stripes with 1" space between all the way down both sides of the apparatus. Colors to be top GOLD, middle WHITE, and bottom GOLD.

MISCELLANEOUS EQUIPMENT FURNISHED

1 pt. touch-up paint

A bag of stainless steel nuts and bolts, as used in the construction of the apparatus.

Pike Poles

A 6' and 10' Ziamatic Pike Poles shall be provided.

OPERATION AND SERVICE MANUALS

Complete "Operation and Service" manuals shall be supplied with the completed apparatus, one (1) printed copy and one (1) CD. Service manual instructions shall include service, maintenance and troubleshooting for major and minor components of the truck. The apparatus manufacturer shall supply part numbers for major components (i.e. Engine, Axles, Transmission, Pump, etc.). A table of contents, hydraulic, air brake and overall apparatus wiring schematics shall be included.

A video demonstration DVD on the operation of the truck shall be supplied with the manuals.

APPARATUS COMPLETION

The customer shall be notified approximately seven (7) days prior to the completion of the apparatus so they may make necessary travel arrangements to pickup the apparatus at the factory.

WARRANTIES

The following warranties shall be supplied:

1. The apparatus shall be warranted to be free from mechanical defects in workmanship for a period of one (1) year. The apparatus shall be covered for parts and labor costs associated with repairs for a period one (1) year.
2. Life-time warranty on the frame.
3. Seven (7) year warranty on paint.
4. Ten (10) body structural warranty
5. Ten (10) year cab structural warranty
6. Manufacturers Warranties for all major components.

Detailed warranty documents shall be included for complete coverage on each of these warranties.

MANUFACTURING & LOCATIONS

The apparatus will be manufactured in facilities wholly owned and operated by the company. A complete stock of service parts, and service shall be provided on a 24 hours around the clock basis. The company shall maintain parts and service for a minimum period of twenty (20) years on each apparatus model manufactured.

The Following items will be included in the bid and delivered to the Wheeling Fire Dept. prior to apparatus arrival.

- 1- Special thread adapters, caps, and plugs for all 2 1/2" Thread. Special Thread 3.055 x 6.
- 2- One (1) Akron Brass 3443 Mercury Quick Attack Monitor w/mounting bracket.
- 3- Two (2) Harrington H500S-50-60-NH Piston Intake Relief Valves, 5" Storz x 6" NH Female Swivel.
- 4- Ten (10) 100' Sections of 5" Supply Hose with Storz Couplings, color to be yellow.
- 5- Fifty Seven (57) 50' Sections of 2 1/2" White DJRL Hose with Special Thread Couplings 3.055 x 6.
- 6- Eight (8) 50' Sections of 2" Blue DJRL Hose with 1 1/2" NH Couplings.
- 7- Twenty Six (26) Sections of 1 3/4" Red DJRL Hose with 1 1/2" NH Couplings.
- 8- Four (4) Night Stick XPR 5580R Lantern Style Lights.
- 9- Two (2) Elkhart 1 1/2" SMFG Select-O-Matic Nozzles 60-200 GPM.
- 10- One (1) Elkhart STSM-30PA Nozzle with 2 1/2" Playpipe with Special Thread 3.055 x 6.
- 11- One (1) Elkhart B-275A Elk-O-Lite 1 1/2" NST Ball Shut Off with 1 3/8" Waterway.

12- One (1) Elkhart 187S 1 1/2" NST, 7/8" Smooth Bore Tip.

13- One (1) Kocheck 201-52 Universal Storz Adapter 3" Female NH x 5" Storz x 2 1/2" Special Thread 3.055 x 6, with a Deep Throat Cap.