TO: **MAYOR AND CITY COUNCIL**

FROM: **NEIL JENSEN, City Administrator**

SUBJECT: **Fire Truck Financing**

MEETING DATE: **June 22, 2021**

BACKGROUND

Financing for the new fire truck was to be available in 2023 as per the new CIP. Please see Fire Chief Althoff's memo for details on the reason behind the early purchase. My memo is to explain if the City Council wishes to move forward with the purchase where the funds will be found.

The Capital equipment fund for the Fire department has $132,000 in it today. The transfer of funds for 2021 is $121,000. It is safe to say that we will receive the Local Government Aid payment from the State of Minnesota this year so we can use a portion of those funds reserved in the budget for 2021 to fund some of the fire truck. Chief Althoff suggested the transfer of $25,000 in the small equipment fund to Capital Equipment to help with the purchase.

Here is the breakdown of the purchase:

Capital Equipment fund	$132,000
2021 Capital Equipment fund transfer	$121,000
Small Equipment Transfer	$ 25,000
Municipal Reserve / LGA reserve 2021	$166,500
	$444,500

The repayment of the municipal reserve to purchase this truck will be done over the next 2 years. The $121,000 fire capital equipment funds for 2022 and 2023 will be diverted into the Municipal Reserve Fund to make up the $166,500. Then the Fire Capital Fund will again receive the CIP allocation of $121,000 going forward.

STAFF RECOMMENDATION

If the City Council wishes to purchase the fire truck the above funds can be used to complete the purchase.

MEMO

TO: **HONARABLE MAYOR AND CITY COUNCIL**

FROM: **MIKE ALTHOFF, FIRE CHIEF**

SUBJECT: **2020 Freightliner Full Response Pumper Purchase**

MEETING DATE: **June 22, 2021**

BACKGROUND

Our apparatus replacement committee started the process of replacing our current Engine 1, a 1991 Ford full response pumper. Our goal was to have a builder and blueprint finalized by mid-year and purchase a new truck in 2023 per our CIP. The money available in 2023 for this purchase is estimated to be $475,000. Early on in this process we knew the money would be tight but thought it would be possible to stay in budget. Some things out of our control have now happened that have pushed prices beyond our limits. There is a nationwide chassis shortage and steel shortage pushing prices higher than expected. In some areas steel prices are up 80%. My best guess is we will be $125,000 over bid in 2023. There is a good possibility the build could be delayed a year or two as well. That's concerning to me because we are already having problems finding parts for our aging truck. During our process of looking at different truck builders in the area, Custom Fire brought a demo truck to our station, this is a similar build to our current two engines. After looking at the truck our committee thought it best to possibly pursue purchasing this demo truck. This truck meets all NFPA standards for a full response pumper. The bid attached includes some add-ons to make it similar to our other pumper. The cost to purchase is $444,471.69. This price will keep us under our estimate in 2023 and replace the truck this year. The best estimate I can provide now is actual cost of a new build in 2023 will be $575,000 to $600,000. We need to provide an $85,000 down payment to purchase the Chassis and the rest is due upon delivery. Expected delivery is August to September. This bid is provided through the HGAC competitive bidding process.

STAFF RECOMMENDATION

Motion to approve purchase of 2020 Freightliner M2-102 Full Response Pumper as described in the quote sheet provided by Custom Fire Apparatus.

REQUESTED COUNCIL ACTION

Approve Purchase of 2020 Freightliner M2-102 Full Response Pumper.

Custom Fire Apparatus Inc.
509 68th Ave
Osceola, WI 54020
800.443.8851

MOTOR VEHICLE PURCHASE CONTRACT

THIS AGREEMENT, Made by and between CUSTOM FIRE APPARATUS, INC. of Osceola, Wisconsin, Party of the First Part, and: the Cannon Falls Fire Department of Cannon Falls, MN Party of the Second Part, hereinafter called the BUYER.

WITNESSETH, That CUSTOM FIRE APPARATUS, INC. Agrees to sell, upon the conditions which are below written, the apparatus and equipment herein before described, all of which are to be in accordance with the specifications and warrantees submitted by CUSTOM FIRE APPARATUS, INC. and which are made a part of this agreement and Contract which includes; ***"One (1) HGAC FS19EC02 Enclosed Top Mount Pumper built on a 2020 Freightliner M2-106 2-Door chassis to include a Full Response® crew cab, 1500 gallon-per-minute Waterous pump with a FoamPro 2001 foam system, 1000-gallon water tank and 20-gallon foam cell, CustomFIRE aluminum body, painted roll-up doors, and NFPA warning lights."***

All of which are in accordance with the Stock Pumper specifications as well as inclusive of the Changes and Additions listed below:

1. Add passenger side swing out tool board ---P-2
2. Add three SCBA brackets on back wall of D-2:
3. Change hose bed cover to 4-way tread plate
4. Add extended front bumper with apron, hose well cover and discharge
5. Add Akron High Riser deck gun with adj nozzle---no stacked tips
6. Add 1 pair of FRC Evolution Spectra SPA-800 scene lights to upper sides of body
7. Remove current NFPA striping on sides of truck, add striping and graphics to match CFFD rescue

The BUYER agrees to purchase and pay with contract for the aforesaid property, the Sum of **($444,471.69).**

Delivered to Your Fire Department Headquarters. ***NOTE: This price is per HGAC FS12-19 contract pricing and is inclusive of the $2,000 HGAC purchase fees.***

TERMS OF PAYMENT AND DELIVERY:
Apparatus shall be completed within 30 - 45 days of receipt of signed contract, subject to all causes beyond our control. Full payment is due on the Day of Delivery.

Customer will take delivery and receive demonstration on use of apparatus at their fire station. In service training is available at factory for no additional charge.

GUARANTY: The BUYER hereby guarantees that the final funds will be ready and available for transfer in the form of legal tender, a negotiable check or direct bank wire transfer on Day of Completion. And it is further mutually agreed that no misunderstanding, verbal or written, regarding equipment or otherwise, shall enjoin CUSTOM FIRE APPARATUS, INC. unless in this contract.

Custom Fire Apparatus Inc.
509 68th Ave
Osceola, WI 54020
800.443.8851

LIABILITY: Physical damage to the truck or chassis will be the responsibility of CUSTOM FIRE APPARATUS, INC. on a primary basis, regardless of what other insurance is available, as long as the vehicle is in the care, custody and control of same. Any componentry furnished by the BUYER, including the truck chassis, will be insured for its purchase price, by and when in the possession of CUSTOM FIRE APPARATUS, INC. Upon arrival of delivery engineer with the apparatus, or upon delivery and acceptance of the same at the factory in Osceola, Wisconsin, Party of the Second Part (BUYER) does agree to provide all insurance to hold both parties harmless and free from any loss.

WITNESS our hands and official seal this 8th day of June, 2021.

CUSTOM FIRE APPARATUS, INC.

By: _____
James M. Kirvida/President
Custom Fire Apparatus, Inc.

CITY OF CANNON FALLS/ FIRE DEPARTMENT

_____

_____

_____, _____

Information for Contractors

End User:
End User Contact:
End User Address:
End User Phone:
End User Email:

Sealed proposals are desired from reputable manufacturers of automotive fire apparatus in accordance with these specifications and with the advertisement, a copy of which is attached, for the piece of apparatus as follows:

Fire Truck, triple combination pumper, 1500 gallon per minute, hose body, booster tank, and all other appurtenances in accordance with the following:

GENERAL REQUIREMENTS

Each bid must be accompanied by bidders accurate written and detailed specifications covering the apparatus and equipment which it is proposing to furnish and to which the apparatus furnished under the Contract must conform. It is the intent of these specifications to cover the furnishing and delivering to the purchaser, complete apparatus equipped as specified. 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. Such details and other construction not specifically covered herein or not at variance with these specifications should conform with the intent of the specifications as outlined in Booklet No. 1901 dated 2016.

The apparatus being furnished under these specifications shall conform to the requirements specific to pumper fire apparatus NFPA Booklet 1901 version 2016. Any test equipment required or expense incurred for the Certification Tests shall be borne by the Contractor supplying this equipment.

RELIABILITY OF CONTRACTOR

Contractor shall furnish satisfactory evidence that he has the ability to design, engineer, and construct the apparatus specified and shall state the location of the factory where the apparatus is to be manufactured and tested. The apparatus design shall be an "original" generated by the Contractor/Bidder and not reproductions of fire/rescue apparatus designs previously engineered by other Contractors/Manufacturers.

DESIGN

The design of the equipment shall be in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements which might cause injury to personnel or equipment. NOTE: Where "nibbled" or non-continuous cutting methods are used to machine the body material, all edges shall be reworked/machine smoothed for injury prevention and appearance reasons.

All oil, hydraulic, and air tubing lines and electrical wiring shall be located in protective positions, properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members.

Parts and components shall be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for the best accessibility.

Cover plates which must be removed for component adjustment or part removal will be equipped with disconnect fastenings or hinged panels.

Drains, filler plugs, grease fittings, hydraulic lines, bleeders and check points for all components will located so that they are readily accessible and do not require special tools for proper servicing. Design practices shall minimize the number of tools required for maintenance.

All components shall be designed and protected so that heavy rain or other adverse weather conditions will not interfere with normal servicing or operation.

All specified stainless steel shall be type 304, 2-B where used for exterior painted panels and #4-brushed where used for pump panel overlays and unpainted compartment and body panels. All specified smooth surface aluminum, where used for painted or machined swirl natural finish, shall be 5052-H32 alloy of the specified thickness. All 4-way aluminum treadplate shall be "polished" finish with NFPA approved pattern on walking and step surfaces, type 3003 of specified thickness. All specified bolted fasteners shall be coated stainless steel "low profile" button socket head cap screws. All nut fasteners to be Ny-Lok or approved equal, designed to prevent loosening, No substitute will be acceptable to stainless steel where specified.

NOTE: Lighter gauges of specified materials will not be acceptable.

The materials specified are considered absolute minimum. Exceptions to these material requirements will not be permitted since all raw materials of the specified type are available to all manufacturers. Since all fire apparatus manufacturers have the ability to shear, brake, and weld as these specifications require - all basic requirements must be complied with.

No exceptions will be allowed for stainless steel material and specified thickness requirements, since these materials are available to all fire/rescue apparatus manufacturers. Aluminum can not be substituted for any specified stainless fabrications.

Each Bidder shall be prepared, if so requested by the Purchaser, to present evidence of his design experience/capabilities and manufacturing ability to carry out the terms of the contract.

CONSTRUCTION METHODS, ALUMINUM FABRICATIONS

Since all reputable manufacturers of Fire Apparatus have the means and the ability to provide the following specified construction and assembly methods, it is the purchaser's desire to ONLY receive proposals of such design. Weld-together aluminum fabrications and/or extrusions do not meet the intent of this requirement.

All proposals must be compliant to the specified sheet and plate aluminum construction materials, including type of alloy, thickness, and surface finish.

Bidders will be required to demonstrate, by example of their previously delivered apparatus; precision of metal cut profiles, accuracy of fastener spacing, fit-and-finish of assembled fabrications, absence of imperfections in metal finishing, and ease of which the assembled fabricated body components may be disassembled and removed for modifications, repairs or replacement.

The apparatus body assembly shall consist of individual brake-formed metal fabrications, each of which is precisely cut from high quality aluminum alloy sheet metal and incorporate integral 90-degree flanges at mating surfaces. Welded-on extrusions will not be acceptable as an alternative method to brake-formed fabricating. All mating surfaces are to be assembled using the specified removable threaded fasteners. Bidders will be required to demonstrate: precision of metal cut profiles, fit-and-finish of assembled fabrications, and ease of which the assembled parts may be disassembled and removed for modifications, repairs or replacement.

Due to the requirement that the apparatus body be easily repairable, proposals that include the practice of stitch-welding, seam-welding, or plug-welding mating body fabrications shall not be submitted. Likewise, apparatus body designs that rely on metal fusion, adhesives, encapsulating welded extrusions, or non-removable fasteners, as a method of permanent assembly, or apparatus body designs and construction methods that have compartment modules welded to their sub-frames, will not be not be considered.

NOTE: THERE SHALL BE NO PROPRIETARY EXTRUSIONS USED IN THE CONSTRUCTION OF THE PROPOSED APPARATUS BODY COMPARTMENTS, THUS ALLOWING FOR PARTIAL OR COMPLETE DISASSEMBLY, AND REPAIRS BY ANY QUALIFIED FABRICATOR AND/OR AUTO BODY COLLISION REPAIR CENTER.

APPARATUS SIZE - CAPACITY - SEATING

Total overall length of apparatus is not to exceed __ ft. __ in., highest point of apparatus is not to exceed ___ inches, chassis wheelbase is not to not exceed ___ inches, and GVWR is to be at least _____ pounds.

The total overall width of apparatus is not to exceed 101 inches; this dimension is not to include the primary construction of the apparatus body and chassis cab. Any peripherals that are 'removable' are not to be incorporated into this measurement. Items that are considered 'removable' are: Rub Rails, Fenderettes, Mirrors, Lights, Handrails, Etc.

RESPONSIBILITY OF PURCHASER: It is the responsibility of the purchaser to specify the details of the apparatus, its required performance, the maximum number of fire fighters to ride on the apparatus, and any hose ground ladders, or equipment it will be required to carry which exceed the minimum requirements of this standard.

A total of _____ (_____ with SCBA's) seating positions are to be provided, "Fully Enclosed", with approved seat belts. Two seating positions are to be located inside forward chassis cab and _____ inside crew cab/area.

The GAWR, and GCWR or GVWR of the chassis is to be adequate to carry the fully equipped apparatus including full water and other tanks, the specified hose load, unequipped personnel weight (The unequipped personnel weight is to be calculated at 250 pound. per person times the maximum number of persons to ride the apparatus as specified.), ground ladders, and a miscellaneous equipment allowance of 2500 pounds. (2000 pounds. for apparatus with less than 250 cu. ft. of compartment space). It is the responsibility of the purchaser to provide the contractor with the weight of equipment to be carried if it is in excess of the allowance of 2500 pound.

PRINTED PROPOSALS

All proposals shall be submitted in typed format. Casual, hand-written proposals shall be considered informal and immediately rejected and the bid will be returned in its entirety to manufacturer. The only handwriting acceptable on the proposal forms will be on the signature lines.

PROPOSAL SIGNATURES REQUIRED

All bids must be signed by the President of the manufacturer of the apparatus being proposed. Bids signed by a sales representative shall be declared informal and will be rejected. Each bid must give the full business address of the manufacturer. Bids by a Corporation must be authorized and signed by the President. Same signature is required on Bid Bond, if specified.

BID WITHDRAWALS

Bids may be withdrawn by certified mail or acknowledged facsimile request from Bidders prior to the time fixed for opening. Negligence on the part of the Bidder in preparing the Bid Proposal confers no right for the withdrawal of the Bid after it has been opened. No Bidder may withdraw their Bid after the time set for the opening thereof.

DETAILED PROPOSAL SPECIFICATIONS

All Bidders shall furnish complete "Proposal Specifications", printed on their own stationery, copies or reproduction of these "advertised specifications" can only be used as an attachment to the proposal specifications, for comparison/ compliance purposes.

All Bid Proposal Specifications must be in the same sequence as these Advertised Specifications for ease of comparison. Any bid not in this sequence will be disregarded and rejected.

LETTER OF EXCEPTIONS

It is the intent of the Fire Department to receive proposals on equipment/apparatus meeting the attached detailed specifications in their entirety. Any proposals being submitted, without "Full Compliance" with the advertised specifications shall so state on the Bid Proposal Page, followed by a detailed "Letter of Exceptions" listing the areas of non-compliance and equipment or designs being substituted.

DELIVERY AND OPENING OF PROPOSAL

Each proposal and all papers bound and attached thereto, together with the proposal guarantee, shall be placed in an envelope and securely sealed therein. The envelope shall be marked "Bid on Fire Equipment".

Proposals will be received at or prior to the time set for the opening of bids. Proposals received after the "Bid Opening" will be returned unopened.

The bids will be opened publicly and read aloud at the time and date stated on the advertisement for bids.

CORPORATE OWNERSHIP OF MANUFACTURER

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, or Individual(s) that is 100% held by United States of America based Company, Corporation, or United States citizens(s).

Proposals from any manufacturer that is fully or partially owned and/or operated by a foreign company, Corporation or Individual(s) under any type of ownership, partnership, or any similar type of agreement will be immediately rejected.

INSURANCE REQUIREMENTS

Each Bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of $11,000,000 million dollars with coverage attained with a minimum of $1,000,000.00 underlying insurance and $10,000,000.00 umbrella coverage. Submitted Certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required Certificate, or for Certificates listing less than One (1) million dollars of underlying coverage, plus the Ten (10) million dollar umbrella coverage, will be considered non responsive and automatically rejected. No exceptions are allowed to the minimum insurance coverage requirement.

The manufacturer shall maintain full coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser. No exceptions. Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

PROPOSAL PRINT/DRAWING

Each Bid shall be submitted with a complete detailed print of the apparatus as is specified. The print shall be to scale of the **exact** apparatus being proposed, and not a stock print of a similar unit. The print shall have complete views of the driver side with chassis cab and crew cab, passenger side with chassis cab and crew cab, rear of body showing crew cab, and top view of the crew cab area. The print shall include all of the following items:

CHASSIS: exact replication of model of chassis cab, air horns, chassis cab step housings, 120-volt shore power receptacle, air system keep-fill receptacle, emergency lighting fixtures, hand rails, and vertical exhaust system with heat shield / horizontal exhaust system outlet.

CREW AREA: side and top views of the crew cab including seating areas, interior and exterior compartments, window locations and door openings.

APPARATUS BODY: the apparatus body sub-frame, underbody tow eyes, water tank profile with baffles and suction sump, underbody folding wheel chocks, all exterior 4-way treadplate pattern areas, body access steps, hand rails, interior compartment shelving, emergency and non-emergency lighting fixtures, ladders and pike poles and storage area(s), hard suction hose and storage area(s), side and rear compartmentation showing dimensions and D-ring door hardware, / roll-up door slats/bundles/bar type handle/latches, and hose bed arrangement with dividers and grating material. / dividers, grating material, and hose bed covers.

PUMP ENCLOSURE and PUMP SYSTEM: pump enclosure/compartment, fire pump profile, fire pump transmission profile, tank-to-pump piping, pre-connect hose beds with hose guides, side pump panel removable sections, pump control and instrument panel layout with: gauges, instruments, pump controls, discharge outlets with closures, suction inlets with closures, and deluge discharge riser with monitor/device.

ADDITIONAL OPTIONAL FEATURES: other optional features, if specified, shall also be included on the proposal drawing, this includes; front bumper extension with attached accessories/treadplate gravel shield/pre-connect hose bed,

interior compartment roll-out trays, drop down ladder rack, rewind air/hydraulic/cord reels, SCBA bottle storage compartments/racks, cascade air storage bottles with fill station, generator installation, permanent quartz lighting, hand operated 120-Volt floodlighting, 120-volt exterior body receptacles, extendible light tower, and other detailed accessories and features so as to provide a "picture" of the proposed apparatus.

COMPLIANCE: this required drawing shall become a part of the Proposal. Failure to submit the above required drawing, with the sealed bid proposal, will cause immediate rejection of the bidder's proposal.

Quality and accuracy of Bidder's Proposal Drawing will be a major consideration, for determining of most acceptable proposal.

PHOTO DOCUMENTATION

Bidder shall refer to the following specifications and include any asked for photos, or drawings of required feature enhancements such as step modules, crew cab features, pump panel inserts, and etc., documenting they have provided these features in the past and are prepared to provide them as required for this Bid Proposal.

AWARD OF CONTRACT

The contract will be awarded, as soon as possible to the most "Responsible Bidder", provided their Bid is reasonable and it is in the best interest of the Fire Department. The purchaser reserves the right to waive any formality in bids received once such waiver is in the interest of the Purchaser. Also, to accept any item in the Bid, found to be of superior quality or otherwise preferred by the Purchaser.

Bidder's experience with described construction methods and previous use of specified materials will be considered in making the award

The competency and responsibility of Bidders along with content of proposal specifications and accuracy/quality of proposal drawing will be considered in making the award. The Purchaser reserves the right to reject any or all Bids when such rejection is in the interest of the Purchaser and to reject the Bid of a Bidder who, in the judgement of the Purchaser, is not in a position to perform the contract. The Purchaser does not, in any way, obligate itself to accept the lowest or any Bid.

The Fire Department reserves the right to reject any or all Bid Proposals and purchase the equipment it prefers.

Bidders taking "Total Exception" to these advertised specifications are hereby advised that such statement will result in immediate REJECTION of the Bid Proposal.

Prior to award, the Bidder Representative will meet with purchasing officials (at Purchaser's location) to personally discuss all facets of these specifications to insure a complete and satisfactory understanding of the Purchaser's specifications and the Bidder's proposal.

INSPECTION TRIPS

The Truck Committee members shall be advised as to the date of the following phases of construction: Pre-Construction (prior to bending of metal), Pre-Paint (final design/equipment layout), and Pre-Delivery. Truck Committee members reserve the right to travel to the factory during these stages of construction.

Bidder shall arrange for, and the Customer will pay the expenses of, the above specified "Pre-Construction Conference", to be held at the manufacturer's factory, at which time all final designs and equipment mounting locations will be approved. Any changes to original proposal specifications, as approved at the Pre-Construction Conference, shall be noted on a "revised specification", provided by the manufacturer and distributed to Truck Committee members within five working days after Pre-Construction Conference.

ACCEPTANCE TESTS AND REQUIREMENTS
Acceptance tests on behalf of the purchaser shall be prescribed and conducted prior to delivery or within 10 days after delivery, by the manufacturer's representative in the presence of such person or persons as the purchaser may designate in the requirements for delivery.

ALTITUDE REQUIREMENTS: The apparatus shall be designed to meet the specified rating at 2000 feet altitude above sea level.

ROADABILTY: The apparatus, when fully equipped and loaded per "Carrying Capacity", shall be capable of the following performance on dry/level/paved roads in good condition: From a standing start the vehicle shall attain a true speed of 35 MPH within 25 seconds. The vehicle shall attain a minimum top speed of 50 MPH. The apparatus shall be able to maintain a speed of at least 20 MPH on any grade up to and including 6%.

ROAD TESTS: Specified acceleration tests shall consist of two runs in opposite directions over the same route. From a standing start, through the gears, the vehicle shall attain a true speed of 35 mph within 25 seconds in the case of pumpers, and a true speed of 55 mph within 60 seconds.

The service brakes shall bring the fully laden apparatus to a complete stop from an initial speed of 20 MPH in a distance not exceeding 35 ft., on a substantially hard level surface road free from loose material, oil, or grease.

Manufacturer's pump test and independent third party pump certification tests shall be conducted by the apparatus manufacturer in accordance with requirements of NFPA #1901. A Certificate of Testing shall be furnished to the Purchaser, both for the Manufacturer's Preliminary Tests and the third party Certification Tests.

Responsibility for the apparatus and equipment shall remain with the contractor until acceptance by the purchaser.

The Manufacturer must supply at the time of delivery, a hard copy of:

1. Engine manufacturer's certified brake horsepower curve showing the maximum no-load governed speed.

2. Manufacturer's record of pumper construction details, per NFPA 1901.

3. Manufacturer's Run-In Certification with preliminary test results.

4. Pump Manufacturer's Certification of Hydrostatic Tests.

5. Pump Manufacturer's Certification of Pump Test Results.

6. The Certification of Inspection/Test of Fire Department Pumper by an Independent Third Party per NFPA 1901 standards.

7. Weight documents from four (4) individual certified scales showing actual loading on the sides of front axle, sides of rear axle(s), and overall (four total) vehicle (with the water tank full but without personnel, equipment, and hose) shall be supplied with the completed vehicle to determine compliance with NFPA section 10-1. Weights shall be for each tire or dual set of tires, so as to verify side-to-side loading, to be in compliance with NFPA section 4.12.2.3.3

8. At least two copies of the complete operation and maintenance manual covering the completed apparatus as delivered including the pump, emergency lighting and siren, generator, or other furnished accessories.

9. Wiring diagrams of 12-volt electrical systems, installed by apparatus body manufacturer (prime contractor). Diagrams must be "vehicle specific", describing all 12-volt electrical functions as furnished on this **and only this** apparatus.

10. A finalized drawing of apparatus as completed.

11. A "Delivery Manual", consisting of a 3-ring notebook type binder with reference tabs for each section, shall be furnished to include the following items: invoice copy(ies), proof of insurance, Manufacturer's Statement of Origin, acceptance forms, certifications, specifications, individual component manufacturer instructions and parts manuals, warranty forms for body, warranty forms for all major components, warranty instructions and format to be used for compliance with warranty obligations, routine service forms/publications, technical publications or training guide for major components, and apparatus body print "as built".

12. Paint numbers of all color coatings.

13. Certifications of water tank capacity.

14. Written load analysis of 12-volt electrical system as installed by body builder.

NOTE: Exceptions to the above requirements will not be acceptable.

A test data plate shall be provided at the pump operator's position which gives the rated discharges and pressures together with the speed of the engine as is determined by the manufacturer's test for this particular unit. Plate shall also include delivery date, pump serial number(s), original Customer, and the apparatus manufacturer's serial number.

The contractor shall affix a permanent plate in the driver's compartment specifying the quantity and type of fluids used in the vehicle:

All nameplates and instruction plates shall be metal or plastic with the information permanently engraved, stamped, or etched thereon. Metal nameplates to be installed with plated screws. All nameplates are to be mounted in a conspicuous place.

FAILURE TO MEET TESTS: In the event that the apparatus fails to meet the test requirements on first trials, a second trial may be made at the option of the Contractor, within thirty 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. Failure to make such changes as the Chief of the Fire Department and/or the purchaser may consider necessary to conform to any clause of the specifications within thirty days after notice is given to the Contractor to make such changes shall also be cause for rejection of the apparatus.

DELIVERY TO FIRE DEPARTMENT - NO EXCEPTIONS

The completed unit shall be delivered to the purchaser with full instructions provided to Fire Department personnel on operation, care, and maintenance of apparatus at the purchaser's fire station.

DELIVERY ENGINEER:

Delivery shall be performed by a factory trained Delivery Engineer only employed by the Bidder. Delivery Engineer shall remain in the community a reasonable time for training of Fire Department personnel and making normal adjustments.

Delivery shall be considered to include, but not be limited to:

A. Transportation of the Fire Apparatus.

B. Conducting day or evening classes for instruction of Fire Department personnel and Drivers for operation.

The Delivery Engineer shall be factory trained, fully capable of conducting informative classes on the complete operation of the vehicle. This means familiarity with engine, running gear, transmission, driving skill, as well as handling of pump equipment and all controls.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Purchaser, recognizing the need for either daytime or evening classes. Advance notice of at least one (1) week will be given, advising the specific day on which the new apparatus will arrive.

The Purchaser shall make all housing arrangements for the Delivery Engineer and provide him with transportation to and from lodging and nearest available airport or rental car agency (if it applies). The cost of all housing and other living expenses are to be paid for by the Delivery Engineer.

PROGRESS PAYMENT

In order to eliminate interest and handling charges for the chassis portion, a "Down Payment" shall be made with Contract. This amount shall be for an equivalent portion of the chassis and is to be identified on the Bid Proposal page.

BALANCE PAYMENT TERMS

All Bidders shall be required to detail on the Proposal Page, and in their own exact words, the balance payment terms for said apparatus.

Final delivery price shall not include any Local, State, or Federal taxes. The Bidder shall not be liable for any State or Federally mandated tax or program after the sale of this apparatus.

GENERAL WARRANTY

The new fire Pumper apparatus manufactured per these specifications shall be warranted for a period of ONE (1) year from the date of delivery, except for chassis and other components noted herein.

Under this warranty, Bidder agrees to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of the Bidder, made available for inspection upon request, returned to Bidder's factory or other location designated by Bidder with transportation prepaid within 30 days after the date of failure or within ONE (1) year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship. Accessories/components warranted by their original manufacturer may be subject to reinstallation charges under the terms of their respective warranties, especially if such warranties exceed the above 1-year warranty terms.

The warranty on the chassis and chassis supplied components, storage batteries, valves, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the chassis manufacturer by the Purchaser.

This warranty will not apply to any fire apparatus which has been repaired or altered outside the Manufacturer factory or designated facility in any way, which, in the manufacturer's opinion might affect its stability or reliability. Each warranty claim needing repair or service at the designated facility must receive pre-authorization by Manufacturer prior to performance of any work.

This warranty will not apply to those items which are usually considered to be normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment or minor auxiliary pumps or reels.

Refer to the "FIRE PUMP" section and "BOOSTER TANK" section for specific extended Manufacturer's warranties on the provided Fire Pump and Water (Foam) Tank(s).

This warranty is in lieu of all other warranties, expressed or implied, all other representations to the original purchaser, and all other obligations or liabilities, including liabilities for incidental or consequential damage on Bidder's part. Without limiting the foregoing, any express or implied warranties of merchantability or fitness for a particular purpose or warranties arising by Customer usage or by operation of law with regard to any products delivered pursuant hereto are expressly disclaimed. Bidder neither assumes nor authorizes any person to assume for Bidder, any liability in connection with the sales of Bidder's apparatus unless made in writing by the Bidder.

10-YEAR WARRANTY ON ALUMINUM BODY FABRICATIONS

The fire apparatus manufacturer (body builder) shall warrant to the original purchaser only, that the aluminum body components as fabricated by the body builder, under normal use and with reasonable maintenance, be structurally sound and shall remain free from corrosion perforation for a period of TEN (10) years.

Body Warranty coverage shall be transferable to a second owner of the vehicle.

This warranty does not apply to the following items which are covered by a separate warranty: paint finish, graphics, hardware, moldings, and other accessories attached to this body.

FIRE APPARATUS MANUFACTURER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE ALUMINUM BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

The body builder shall replace, without charge, repair at the factory, or make a fair allowance for any defect in material or workmanship demonstrated to the satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If the body builder elects to repair the body, the extent of such repair shall be determined solely by the body

builder, and shall be performed solely at the body builder's factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

The fire apparatus manufacturer (body builder) shall not be liable for consequential damages and under no circumstances shall its liability exceed the price for a defective body. The remedies set forth herein are exclusive and in substitution for all other remedies to which the purchaser would otherwise be entitled.

The fire apparatus manufacturer (body builder) shall be given a reasonable opportunity to investigate all claims. The purchaser must commence any action arising out of, based upon or relating to agreement or the breach thereof, within twelve months from the date the cause of the action occurred.

5-YEAR APPARATUS PAINT WARRANTY

The five (5) year paint performance guarantee will cover the areas of the vehicle as are originally finished by the apparatus body manufacturer with the specified product for a period of FIVE (5) years beginning the day the vehicle is delivered to the purchaser.

The areas as outlined on the Guarantee Certificate, will be covered for the following paint failures:

GUARANTEE INCLUSIONS:

FULL APPARATUS BODY:

* Peeling or delamination of the topcoat and/or other layers of paint.

* Cracking or checking

* Loss of gloss caused by cracking, checking, or hazing.

* Any paint failure caused by defective finishes which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original owner.

The warranty on the chassis paint is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the chassis manufacturer by the Purchaser. Where painted shutter style doors are provided, the warranty is limited to that which is provided by the manufacturer thereof. Graphics are excluded from refinishing under warranty.

LIFETIME SUB-FRAME WARRANTY - STAINLESS STEEL

The specified tubular stainless steel apparatus body sub-frame is to be warranted for the vehicle's lifetime, against cracks, corrosion and rubber isolator deterioration.

LIFETIME WARRANTY - WATER TANK

The water tank, and its installed accessories, shall be covered by a "Lifetime" Warranty, against cracks, corrosion, or other failures caused by the tanks design and normal use of the same. The warranty shall be between the tank manufacturer, and the customer.

TANK CRADLE STRUCTURE WARRANTY

The tank cradle is to have a lifetime warranty, covering both structural and corrosion, as provided by body builder.

LIFETIME WARRANTY - FOAM TANK

The foam reservoir/tank, and installed accessories, shall be covered by a "Lifetime" Warranty, against cracks, corrosion, or other failures caused by the tanks design and normal use of the same. The warranty shall be between the foam tank manufacturer, and the customer.

WATEROUS 7-YEAR PUMP PARTS

The specified Waterous fire pump and Waterous fire pump (only) accessories shall carry a Waterous seven (7) year warranty covering defective parts only (not labor). NOTE: This warranty's terms and conditions shall be handled directly between the Customer and the Waterous Company.

VALVE WARRANTY, BETWEEN VALVE MANUFACTURER AND CUSTOMER

The Akron valves are to carry a 10-year valve manufacturer's warranty, terms and conditions to be as per Akron Brass Company policy, The warranty is to be between the customer and Akron Brass Company.

CHASSIS BEING FURNISHED: COMMERCIALLY-BUILT CAB and CHASSIS

The following specified chassis is a commercially-built "conventional style" cab and chassis, to be provided by Custom Fire Apparatus, and its cost is included in the Total Bid Proposal Price.

FREIGHTLINER SPECIFICATION PROPOSAL

Vehicle Configuration

M2 106 CONVENTIONAL CHASSIS

2020 MODEL YEAR SPECIFIED

SET BACK AXLE - TRUCK

General Service

FIRE/EMERGENCY SERVICE

MEDIUM TRUCK 2 YEAR WARRANTY

EXPECTED FRONT AXLE LOAD: 16000 lbs

EXPECTED REAR DRIVE AXLE LOAD: 31000 lbs

EXPECTED GROSS VEHICLE CAPACITY: 47000 lbs

Engine

CUM L9 350 HP @ 2000 RPM, 2200 GOV RPM, 1000 LB/FT @ 1400 RPM FIRE/EMERGENCY

Engine Equipment

2016 ONBOARD DIAGNOSTICS/2010 EPA/CARB/GHG17

NFPA COMPLIANT EMBER SCREEN AND FIRE RETARDANT DONALDSON AIR CLEANER

DR 12V 275 AMP 40-SI BRUSHLESS PAD ALTERNATOR WITH REMOTE BATTERY VOLTAGE SENSE

(2) ALLIANCE MODEL 1231, GROUP 31, 12 VOLT MAINTENANCE FREE 2250 CCA THREADED STUD BATTERIES WITH JUMP START POSTS

BATTERY BOX FRAME MOUNTED

WIRE GROUND RETURN FOR BATTERY CABLES WITH ADDITIONAL FRAME GROUND RETURN

POSITIVE LOAD DISCONNECT WITH CAB MOUNTED CONTROL SWITCH MOUNTED OUTBOARD DRIVER

CUMMINS TURBOCHARGED 18.7 CFM AIR COMPRESSOR WITH INTERNAL SAFETY VALVE

CUMMINS EXHAUST BRAKE INTEGRAL WITH VARIABLE GEOMETRY TURBO WITH ON/OFF DASH SWITCH

RH MTD HORIZONTAL AFTERTREATMENT WITH RH TAILPIPE

HORTON DRIVEMASTER ON/OFF FAN DRIVE

AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH

CUMMINS SPIN ON FUEL FILTER

COMBINATION FULL FLOW/BYPASS OIL FILTER

1100 SQUARE INCH ALUMINUM RADIATOR

ANTIFREEZE TO -34F, OAT (NITRITE AND SILICATE FREE) EXTENDED LIFE COOLANT

GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT

CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES

ELECTRIC GRID AIR INTAKE WARMER

DELCO 12V 38MT HD STARTER WITH INTEGRATED MAGNETIC SWITCH

Transmission

ALLISON 3000 EVS 5 SPD AUTOMATIC TRANSMISSION WITH PTO PROVISION

Transmission Equipment

MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN

PUSH BUTTON ELECTRONIC SHIFT CONTROL, DASH MOUNTED

TRANSMISSION PROGNOSTICS - ENABLED 2013

WATER TO OIL TRANSMISSION COOLER

TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK

SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT)

Front Axle and Equipment

DETROIT DA-F-16.0-5 16,000# FL1 71.0 KPI/3.74 DROP SINGLE FRONT AXLE

MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES

FIRE AND EMERGENCY SEVERE SERVICE, NON-ASBESTOS FRONT LINING

HALDEX AUTOMATIC FRONT SLACK ADJUSTERS

TRW TAS-85 POWER STEERING

Front Suspension

16,000# TAPERLEAF FRONT SUSPENSION

GRAPHITE BRONZE BUSHINGS WITH SEALS

FRONT SHOCK ABSORBERS

Rear Axle and Equipment

31,000 LB FIRE/EMERGENCY SERVICE SINGLE REAR AXLE

IRON REAR AXLE CARRIER WITH STANDARD AXLE HOUSING

MXL 17T MERITOR EXTENDED LUBE MAIN DRIVELINE WITH HALF ROUND YOKES

DRIVER CONTROLLED TRACTION DIFFERENTIAL

MERITOR 16.5X7 P CAM REAR BRAKES, DOUBLE ANCHOR, CAST SHOES

FIRE AND EMERGENCY SEVERE SERVICE NON-ASBESTOS REAR BRAKE LINING

HALDEX GOLDSEAL LONGSTROKE 1-DRIVE AXLE SPRING PARKING CHAMBERS

HALDEX AUTOMATIC REAR SLACK ADJUSTERS

Rear Suspension

31,000# FLAT LEAF SPRING REAR SUSPENSION WITH HELPER AND RADIUS ROD FOR FIRE/EMERGENCY

SPRING SUSPENSION - 1.00" AXLE SPACER

FORE/AFT CONTROL RODS

Brake System

AIR BRAKE PACKAGE

WABCO 4S/4M ABS WITH TRACTION CONTROL & ESC

STANDARD AIR SYSTEM PRESSURE PROTECTION

BW AD-9 BRAKE LINE AIR DRYER WITH HEATER

CUSTOM STEEL AIR BRAKE RESERVOIRS

BW DV-2 AUTO DRAIN VALVE WITH HEATER - WET TANK

Electrical Connections

UPGRADED CHASSIS MULTIPLEXING UNIT

UPGRADED BULKHEAD MULTIPLEXING UNIT

Wheelbase & Frame

(246 INCH) WHEELBASE / (180.5 INCH) CA

11/32X3-1/2X10-15/16 INCH STEEL FRAME 120KSI

¼” C-CHANNEL INNER FRAME REINFORCEMENT

(60 INCH) REAR FRAME OVERHANG

Chassis Equipment

THREE-PIECE 14 INCH CHROME STEEL BUMPER WITH COLLAPSIBLE ENDS AND CUTOUT FOR SPEAKER

FRONT TOW HOOKS - FRAME MOUNTED

FENDER & FRONT OF HOOD MTD FRONT MUDFLAPS

GRADE 8 THREADED HEX HEADED FRAME FASTENERS

Fuel Tanks

50 GALLON POLISHED ALUMINUM FUEL TANK - LH

6 GALLON DIESEL EXHAUST FLUID TANK

FUEL/WATER SEPARATOR WITH WATER IN FUEL SENSOR AND 12 VOLT PREHEATER

EQUIFLO INBOARD FUEL SYSTEM

Tires

MICHELIN XZA2 ENERGY 315/80R22.5 20 PLY RADIAL FRONT TIRES

MICHELIN X WORKS Z 315/80R22.5 20 PLY RADIAL REAR TIRES

Hubs

CONMET PRESET PLUS IRON FRONT HUBS

WEBB IRON REAR HUBS

Wheels

22.5X9.00 10-HUB PILOT POLISHED ALUMINUM DISC FRONT WHEELS

22.5X9.00 10-HUB PILOT POLISHED ALUMINUM DISC REAR WHEELS

Cab Exterior

106 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL AIR RIDE CAB WITH EXTERIOR SUN VISOR

NFPA COMPLIANT EXTERIOR GRAB HANDLES

HOOD MOUNTED CHROMED PLASTIC GRILLS

TUNNEL/FIREWALL LINER

2-1/2 INCH RUBBER FENDER EXTENSIONS

DUAL 25 INCH ROUND STUTTER TONE HOOD MOUNTED AIR HORNS

DUAL ELECTRIC HORNS

INTEGRAL HEADLIGHT/MARKER ASSEMBLY WITH CHROME BEZELS AND DAYTIME RUNNING LIGHTS

WIG-WAG FEATURE FOR LOW BEAM HEADLIGHTS.

LED AERODYNAMIC MARKER LIGHTS

DUAL 102” WEST COAST BRIGHT FINISH HEATED MIRRORS WITH LH AND RH REMOTE

LH AND RH 8 INCH BRIGHT FINISH CONVEX MIRRORS MOUNTED UNDER PRIMARY MIRRORS

63X14 INCH TINTED REAR WINDOW

TINTED DOOR GLASS LH AND RH WITH TINTED NON-OPERATING WING WINDOWS

RH AND LH ELECTRIC POWERED WINDOWS

TINTED WINDSHIELD

2 GALLON WINDSHIELD WASHER RESERVOIR WITHOUT FLUID LEVEL INDICATOR, FRAME MOUNTED

Cab Interior

OPAL GRAY VINYL INTERIOR

MOLDED PLASTIC DOOR PANELS WITH ALUMINUM KICKPLATES LOWER DOORS

BLACK MATS WITH PREMIUM INSULATION

WOODGRAIN INSTRUMENT PANELS

FORWARD ROOF MOUNTED CONSOLE WITH UPPER STORAGE COMPARTMENTS WITHOUT NETTING

IN DASH STORAGE BIN

AM/FM/WB DASH MTD RADIO WITH BLUETOOTH MICROPHONE, USB PORT, (2) AUXILIARY INPUTS

(2) CUP HOLDERS LH AND RH DASH

HEATER, DEFROSTER AND AIR CONDITIONER

MAIN HVAC CONTROLS W/ RECIRCULATION SWITCH

SOLID-STATE CIRCUIT PROTECTION AND FUSES

12V NEGATIVE GROUND ELECTRICAL SYSTEM

OVERHEAD INSTRUMENT PANEL

DOME DOOR ACTIVATED LH AND RH, DUAL READING LIGHTS, FORWARD CAB ROOF

CAB DOOR LATCHES WITH MANUAL DOOR LOCKS

(1) 12V POWER SUPPLY & USB CHARGER IN DASH

SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR SUSPENSION DRIVER SEAT NFPA COMPLIANT

SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR SUSPENSION PASSENGER SEAT NFPA COMPLIANT

LH AND RH INTEGRAL DOOR PANEL ARMRESTS

GRAY VINYL SEAT COVERS WITH GRAY CORDURA CLOTH BOLSTERS AND HEADRESTS

3 POINT HIGH VISIBILITY ORANGE RETRACTOR DRIVER AND RH FRONT PASSENGER SEAT BELTS WITH NFPA COMPLIANT VDR & SEAT BELT SENSOR

ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN

4-SPOKE 18 INCH STEERING WHEEL

DRIVER AND PASSENGER INTERIOR SUN VISORS

Instruments & Controls

BLACK GAUGE BEZELS

LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM

2” PRIMARY & SECONDARY AIR PRESSURE GAUGES

ENGINE COMPARTMENT MOUNTED AIR RESTRICTION INDICATOR WITH GRADUATIONS

ELECTRONIC CRUISE CONTROL WITH SWITCHES IN LH SWITCH PANEL

ICU3S, 132X48 DISPLAY WITH DIAGNOSTICS, 28 LED WARNING LAMPS AND DATA LINKED

FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING

2 INCH ELECTRIC FUEL GAUGE

ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE

2 INCH TRANSMISSION OIL TEMPERATURE GAUGE

ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY

ELECTRIC ENGINE OIL PRESSURE GAUGE

ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE

ELECTRONIC 3000 RPM TACHOMETER

DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY

SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY

MARKER LIGHT SWITCH INTEGRAL WITH HEADLIGHT SWITCH

ONE VALVE PARKING BRAKE SYSTEM WITH DASH VALVE

SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, WASHER/WIPER AND HAZARD IN HANDLE

INTEGRAL ELECTRONIC TURN SIGNAL FLASHER WITH HAZARD LAMPS
OVERRIDING STOP LAMPS

Paint Design

ONE SOLID CUSTOM BASE/CLEAR COAT RED COLOR AXLTA L4664EB

BLACK, HIGH SOLIDS POLYURETHANE CHASSIS PAINT

MODIFICATIONS TO CHASSIS, TO BE PROVIDED BY BODY BUILDER:

The following special modifications are to be performed by the Fire Apparatus Body Builder/Manufacturer, on the specified fire apparatus Truck Cab and Chassis.

CHASSIS MODIFICATIONS: COMMERCIAL CHASSIS APPLICATION:

SPEED GOVERNOR TEST
Engine limiting speed governor is to be tested, upon arrival at the Body Builder's factory for compliance with the maximum no-load engine operating speed, as determined on appropriate engine power curve sheet.

SUSPENSION AND FRAME CORROSION PROTECTION
Rear axle suspension brackets, left and right sides, front and rear, are to be caulked with silicone sealant preventing build-up of road salts and moisture that may cause future corrosion of bracket-to-frame-rail attachment points.

FRAME RAIL MOUNTING PROCEDURE
All chassis frame rail mounted brackets, supports, pump flanges, and apparatus body sub-frame components are to be bolted to the frame rail sides. No holes are to be drilled in the frame flanges, only the web may be drilled. No welding will be allowed to the chassis frame, web, or flanges, ahead of the rear most spring shackles. Frame flange sandwich clamping devices (U-bolts) will not be used.

FIRE SERVICE FRAME PREPARATION
In order to assure maximum apparatus body compartmentation along the entire length of the left and right frame rails ahead of and behind the rear axles, all exterior frame mounted accessories are to be removed and relocated inside the frame rails so as to not interfere with location of the fire pump, piping, water tank sump, pump transmission, or exhaust system. Where more than one (1) chassis frame cross-member is removed to facilitate installation of the fire pump and water tank, new cross-member(s) are to be furnished and installed. Relocation of air dryer and air tanks is to facilitate access for maintenance of these same components. Where rivets or permanent fasteners are furnished by the chassis OEM, to mount accessories to be relocated, they are to be removed and replaced by hardened threaded fasteners.

NFPA RELATED STANDARDS:

GROUND CLEARANCE STANDARDS
Axle housings are to clear the road surface by at least 8" and; an angle of departure of at least 8 degrees is to be maintained at rearmost protrusion (bumper/tailboard) of the vehicle when fully loaded.

VISIBLE WARNING DEVICE AND PLACARDS
The specified "Hazard" Indicator Light is to be mounted inside chassis cab so as to be prominently visible to the driver.

ROLLOVER STABILITY - NFPA (CURRENT) CHASSIS ESC SYSTEM

The apparatus shall meet the rollover stability criteria defined in current NFPA by being equipped with an Electronic Stability Control (ESC) system as provided by the chassis manufacturer. The system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

FLUID DATA LABEL

A printed Fluid Data Field label is to be furnished, installed inside the chassis and visible from exterior ground level. Data Field is to provide the following information, **as is applicable** to the particular apparatus:

1. Engine Oil
2. Engine Coolant
3. Chassis Transmission Fluid
4. Pump Transmission Lubrication Fluid
5. Pump Primer Fluid
6. Drive Axle Lubrication Fluid
7. Air Conditioning Refrigerant
8. Air Conditioning lubrication oil
9. Power Steering Fluid
10. CAFS System Lubricant
11. Transfer Case Fluid
12. Front Tire Cold Pressure
13. Cab Tilt Mechanism Fluid
14. Transfer Case Fluid (chassis)
15. Equipment Rack Fluid
16. Generator System Lubricant
17. Chassis Manufacturer
18. OEM Production Number
19. Paint Number

20. Year Built
21. Date Shipped
22. Vehicle Identification Number (VIN)
23. Rear Tire Cold Pressure

Fluid Data label is to be permanently encased in a chrome full surround bezel.

WARNING LABEL: VEHICLE WEIGHT, HEIGHT, LENGTH, AND SEATING CAPACITY

A single label, with printed data field, is to be installed in the cab, in direct view of the seated Driver, to denote the following:

VEHICLE WEIGHT
To indicate, in pounds and tons, the vehicle's total "as delivered" weight (with water and/or foam load, if so equipped), and the maximum for seated occupants (250 pounds allowance for each person).

VEHICLE HEIGHT AND LENGTH
In feet-and-inches; the overall height of the vehicle (to the highest permanent point-except antennas), and overall length of vehicle (bumper to tailboard).

SEATING/OCCUPANCY
The exact number of passengers to be carried in the chassis cab and/or crew cab.

NOTE: The dimensions and weight are to be "as manufactured", and the customer must revise the data plate, if they so change the height (by permanent loading and accessory equipment/device installations), and the weight by adding loose equipment, products, and supplies.

WARNING Label is to be permanently encased in a chrome full surround bezel.

SEAT BELT WARNING LABELS

One or more permanent labels to be installed in the cab visible to each seating position, to read: **WARNING: Occupants must be seated and belted while apparatus in in motion**. Labels are to be permanently encased in a chrome full surround bezel.

REFLECTIVE MEDIA (STRIPING), CAB INTERIOR DOORS

A White ScotchLite or equivalent reflective stripe is to be affixed to the interior of each chassis cab door. The stripes are each to be a minimum of 96 sq. in. so as to meet the NFPA 1901 requirement.

HELMET WARNING LABEL

One or more permanent labels to be installed in the cab visible to each seating position, to read: **WARNING: Occupants MUST NOT wear helmets while seated**.

Labels are to be permanently encased in a chrome full surround bezel.

AIR SYSTEM PRESSURE PROTECTION VALVE

The chassis air system shall be furnished with a Pressure Protection Valve/Device, located at point of air supply to auxiliary accessories. The Pressure Protection Valve shall prevent the passage of air pressure, to apparatus builders installed accessories, such as: Air Horns, PTO or Pump Shift, Air Actuators, and other air operated accessories, whenever system air pressure is below 80 PSI.

COMPLIANT DPF/DEF EXHAUST SYSTEM

The original equipment chassis engine DPF/DEF (diesel particulate filter/diesel exhaust fluid) exhaust system, upstream and downstream of the passenger side outlet, shall remain unaltered (not modified) to remain in compliance with exhaust emission standards in effect at time of contract. The apparatus body design and accessory installations may have to be compromised, in order to prevent interference with the exhaust system components. Fabricated stainless steel heat deflector plates are to be provided, where necessary, to protect body manufacturer installed components from excessive radiant heat. Exhaust outlet shall terminate below body compartment floor immediately ahead of rear wheels on passenger side of vehicle.

AIR INTAKE EMBER SEPARATOR

The chassis engine air intake system shall be equipped with an intake screen or filter provided by chassis manufacture that will block particulate matter larger than 0.039" from reaching the air filter element, to prevent ignition of the same.

DIESEL FUEL FILL, AS PROVIDED BY CHASSIS OEM

The Diesel Fuel Fill Port, is to be as is provided by the commercial chassis manufacturer. Access for Diesel fill is available "exposed" underside the upper level cab step, or through an optionally specified cab step housing.

UREA FILL, AS PROVIDED BY CHASSIS OEM

The Urea Fill Station, is to be as is furnished by the commercial chassis manufacturer. Access for Urea fill is available "exposed" underside the chassis, or through an optionally specified tank enclosure.

UREA RESERVOIR TO BE FILLED UPON DELIVERY

The chassis furnished Urea Reservoir is to be "topped-off" (filled) upon the vehicle's delivery to the purchaser.

GATED COOLANT LINES: AUXILIARY HEATER(S)

Engine cooling system chassis cab heater return-to-engine line shall be separated and equipped with a .5" i.d. bronze NRS screw type gate valve and .625" i.d. neoprene rubber heater hose extending to specified auxiliary heater(s). An additional .5" bronze NRS gate valve is to be furnished on the auxiliary heater(s)-to-engine return line. Gate valves shall allow complete shut-off of the chassis cab and remote auxiliary heating system(s) that are downstream of the chassis cab heater. Gate valves shall prevent hot water circulation during warm weather periods and to allow shutdown should a hose or heater core leak develop.

COOLANT "BOOST" PUMP

The specified pump compartment heater core is to be piped to the engine coolant system, installation to include: 12-volt in-line Groco "free-flow" centrifugal cast bronze bodied coolant "boost" pump, parallel run of high grade coolant hoses with stainless steel screw type hose clamps.

Installation of coolant pump is to provide increased rate of coolant flow to assure maximum available chassis cab and auxiliary heater core temperatures during extreme winter conditions.

Coolant Pump is to be activated and deactivated by the optionally specified "auxiliary" heater fan switch.

TIRE PRESSURE WARNING DEVICE, LED CAPS FOR 6 TIRES

There shall be a VECSAFE LED, tire alert pressure management system furnished that shall monitor each tire’s pressure. A chrome plated brass sensor shall be furnished on the valve stem of each tire for a total of six (6) tires. The sensor shall activate an integral battery-operated LED when the pressure of a tire drops 8 PSI, from the nominal pressure when the cap was installed. Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

TIRE VALVE CORE EXTENSIONS

Two (2) each "rigid" metal valve core threaded extensions shall be furnished, installed on the inside dual rear tires of the vehicle's rear axle. Inside dual wheels shall be positioned so that the valve core extensions protrude through the outside dual wheels, located directly across from the outside dual wheel's valve core.

LUG NUT COVERS

The specified front and rear driver's and passenger's side wheels shall be equipped with chrome plated friction fit lug nut covers.

HUB COVERS - FRONT - OIL VIEW

Stainless steel front center hub (only) covers to be furnished, 1-driver's side and 1-passenger's side front axle, covers to be solid single piece with no center hole. Hub covers to be friction fit.

HUB COVERS - REAR - HIGH HAT

One pair (2 each) stainless steel "high hat" axle hub covers shall be furnished driver's side and passenger's side of single rear axle. Hub cover brim flanges are to be sandwiched between inner and outer rear wheels. Entire axle center hub is to be enclosed by the hub cover.

WHEEL CHOCKS - FOLDING STYLE, WITH UNDERBODY BRACKETS, DRIVER SIDE

One pair (2 each) Ziamatic SAC-44 "folding" aluminum wheel chocks to be furnished, complete with SQCH-44H horizontal underbody slide-out mounting brackets. Chock underbody brackets are to be mounted beneath compartment floors, on driver side: 1-ahead of and 1-behind the rear wheels.

DRIVELINE JOINTS

The chassis driveline modifications, as required for use with the split-shaft fire pump transmission, are to be found in the Pump Section.

MUD FLAPS

Driver's side and passenger's side front fender and rear body wheel well mud flaps shall be furnished, made of fabric reinforced neoprene rubber, bolted to the front fender liner and rear wheel well bulkheads using stainless steel strap brackets and bolts. Mud flaps shall extend approximately 10" below running board level.

ANTENNA BASE AND CABLE

One (1) each, radio antenna model MATM mounting base shall be furnished, along with at least 25' of appropriate cable, both to compatible with the Customer's furnished antenna "whip". Antenna base to be roof mounted (exact location to be determined at Pre-Build), with cable ran to the prescribed radio location, NOTE: Customer must furnish radio, antenna whip, and installation of radio unit, after completed delivery.

HELMET STORAGE

The customer shall store the firefighter's helmets inside one of the apparatus body compartments, during road travel.

MANUALS, CERTIFICATIONS, AND DIAGRAMS, IN ENGLISH LANGUAGE

At the time of delivery, one (1) hard copy(ies) of: each of the following manuals will be provided.

1. Engine manufacturer's certified brake horsepower curve showing the maximum no-load governed speed.

2. Manufacturer's record of pumper construction details, per NFPA 1901.

3. Manufacturer's Run-In Certification with preliminary test results.

4. Pump Manufacturer's Certification of Hydrostatic Tests.

5. Pump Manufacturer's Certification of Pump Test Results.

6. The Certification of Inspection/Test of Fire Department Pumper by an Independent Third Party per NFPA 1901 standards.

7. Weight documents shall be supplied with the completed vehicle to determine compliance with NFPA section 10-1. Weights shall be for each tire or dual set of tires, so as to verify side-to-side loading, to be in compliance with NFPA section 4.12.2.3.3.

8. The complete operation and maintenance manual covering the completed apparatus as delivered including the pump, emergency lighting and siren, generator, or other furnished accessories.

9. A finalized drawing of apparatus as completed.

10. A "Delivery Manual", consisting of a 3-ring notebook type binder with reference tabs for each section, shall be furnished to include the following items: invoice copy(ies), proof of insurance, Manufacturer's Statement of Origin, acceptance forms, certifications, specifications, individual component manufacturer instructions and parts manuals, warranty forms for body, warranty forms for all major components, warranty instructions and format to be used for compliance with warranty obligations, routine service forms/publications, technical publications or training guide for major components, and apparatus body print "as built".

11. Paint numbers of all color coatings.

12. Certifications of tank(s) capacity.

13. Written load analysis of 12-volt electrical system as installed by body builder.

A test data plate shall be provided at the pump operator's position which gives the rated discharges and pressures together with the speed of the engine as is determined by the manufacturer's test for this particular unit. Plate shall also include delivery date, pump serial number(s), original Customer, and the apparatus manufacturer's serial number.

"AS BUILT" ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the fire apparatus, are to be provided.

Wiring diagrams are to be of 12-volt electrical systems, as installed/built by apparatus body manufacturer (prime contractor). Diagrams to be "vehicle specific", describing all 12-volt electrical functions as furnished on this **and only this** apparatus.

NFPA REQUIRED TESTING OF APPARATUS NOISE LEVELS

The completed apparatus shall be "Noise Level Tested" to be in compliance with NFPA standards in effect on the day of purchase, Noise level testing shall be of the particular apparatus, not of a similar series or model, and shall be accomplished just prior to delivery to the customer.

COMMERCIALLY AVAILABLE STAND-ALONE CREW CAB

The following specified Stand-Alone Crew Cab/Fire Pump Enclosure shall be designed, constructed, and configured AS SPECIFIED, since this described product is "Commercially" available to all fire apparatus manufacturers that are 100% owned by a United States of America Parent Company.

STAND-ALONE CREW CAB EXTERIOR DIMENSIONS

The Stand-Alone Crew Cab/Fire Pump Enclosure is to have the following Dimensions:

Overall Width is to be:100"
Overall Height is to be: 99" above Runingboards, 79" Stand-Up/Walk-Through Height
Forward Section (ahead of the Side Crew Access Door(s) Width to be 24" Wide
Crew Cab Access Door(s) Width to be: 28" wide x 94" Tall
Rearward Section (aft of the Side Crew Access Door(s) Width to be:38" Wide
Total Overall Length (Forward Side, Access Doors, Rearward Side): 90" Front to Rear

PUMPER CREW CAB WITH ENCLOSED TOP-CONTROL PUMP PANEL

The specified Crew Cab with integral Fire Pump Module is to be "fully engineered", with ALL crew cab exterior wall fabrications, crew cab interior fabrications, crew cab roof fabrications, fire pump mounting brackets, structural fabrications, operator's platform/walkway floor panels and risers, pre-connect hose bed panels and dividers, running boards and support brackets, removable side pump panels, top control panel, and instrument/gauge panels computer three-dimension modeled and on-screen assembled; each component being traceable to a precision engineered digital drawing.

Engineering is to include all assembly fastener holes for structural fabrications and fire pump mount brackets.

Control panel engineering is to include locations of all discharge outlets and controls, suction inlets and controls, bleeder valves and controls, and optionally specified accessories.

Instrument panel engineering is to include locations of all gauges, instruments, panel light housing, hinge fastener holes and hardware mount holes.

ENCLOSED TOP MOUNT

A fully enclosed cab module shall be provided to accommodate the firefighters, and provide enclosed top-mount operation of the pump system. The modular cab shall be "stand-alone", totally separate from the apparatus body and from the chassis cab.

The modular cab shall have two (2) full height crew access doorways, with hinged doors provided with upper level windows.

Cab entrances are to be in compliance with NFPA standards handrails.

The exterior and interior steps and floor covering/plating’s are to be in compliance with NFPA for slip resistance and heights from ground as well as intermediate steps.

CONSTRUCTION MATERIALS

The crew cab structural components is to be fabricated of 12-gauge type 304-2B smooth sheet stainless steel, including: full height driver's and passenger's forward cab sides with outboard corners, driver's and passenger's full height rear cab sides, and rear cab full width panels.

The crew cab fabricated outer door panels are to be constructed of .125" smooth sheet aluminum.

The front full width vertical panels are to be fabricated of 12-gauge type 304-2B smooth sheet stainless steel.

The following crew cab components are to be fabricated of .125" polished 4-way aluminum treadplate C-102 pattern: entire roof cap, interior crew cab transverse floor/walkway, interior doorway step wells, interior crew cab pump enclosure, removable pump access door, and optionally specified recessed seating cavity.

Where multiple treadplate fabrications are mated, on the visible exterior of crew cab, the treadplate is to be "pattern-matched".

NOTE: All specified aluminum treadplate step and walk surfaces are to incorporate an NFPA approved non-slip 4-way pattern.

All crew cab screw type fasteners are to be stainless steel "low profile" button socket head cap screws, equipped with Ny-Lok stainless steel hex nuts.

CONSTRUCTION METHODS

The entire crew cab module is to be precision machine fabricated "concealed-bolted-construction," and properly reinforced without the use of angles or structural shapes. Bolted construction is to allow for individual removal of each and every fabricated component, in the event of damage. Flanged areas of individual fabricated crew cab components are to be located inside the crew cab area so that their screw type fasteners are not visible from the exterior.

The size of fasteners and their spacing are to provide for maximum structural integrity and no leakage in mating flanged area between fasteners. All nuts shall be Ny-Lok, designed to prevent loosening, NOTE: Hex head, truss head, Phillips pan head, or other large profile fasteners are not to be used for assembly of fabricated sheet metal components.

The entire roof cap. full width and full length, is to also be of all-bolted construction to allow for easy replacement in the event of damage from overhead hazards.

Driver's and passenger's forward crew cab corners are to be full height of crew cab sides, with radius outboard front corners, and rear double flange forming the forward crew cab vertical door jamb. Front of the crew cab is to be "vertical" from top to bottom, extending above the roof line of the chassis cab, and providing for generous stand-up interior height.

CREW CAB ACCESS DOOR WAYS, TWO (2) EACH

Driver's and passenger's side crew cab doorways shall be furnished, minimum size of 99" high x 28" wide, each provided with following specified flush-fit vertically hinged crew door and interior doorway step well.

NOTE: The top of doorway opening shall be within four (4) inches of the roof cap height, to allow for maximum entry/exit head room.

DOORWAY VERTICAL SCUFF PLATES

The rear "trailing-edge" doorway jambs shall be lined, full height and full depth (also wrapping around the exterior door jamb corner), with a single piece machine polished stainless angular trim molding for paint protection.

OVERHEAD DRIP PROTECTION

Full length machine polished extruded aluminum drip moldings shall be furnished, bolted in position immediately above crew cab doorway openings, extending from forward outboard corner to rear of roof cap. Drip moldings shall be drilled/fitted prior to and installed after final painting.

HAND RAILS, INTERIOR AND EXTERIOR

Interior door liner angle-mounted and exterior trailing doorway vertically mounted 1-.25" diameter non-slip tubular hand rails are to be furnished, with chrome plated bolt-on brackets and surface mount gaskets.

CREW ACCESS DOORS

Driver's and passenger's side "flush" vertically hinged crew cab access doors shall be furnished, outer door panels fabricated of smooth sheet aluminum, minimum of 2" thick, with U-formed flanged perimeter. Specified inner door liners are to be bolt-on easily removable, using low-profile machine screws and Nut-Serts imbedded in perimeter door flange

Polished stainless steel full height piano hinges are to be bolted to the door and to the forward "leading-edge" flange of doorway, using stainless screws and removable Ny-Lok nuts. Hinge leaf fastener holes and corresponding door jamb mounting holes are to be included in the CAD engineering, to assure precision fit of door in opening, and replacement repeatability.

3M dielectric insulating polyester film barrier tape must be provided on the mating surfaces of: hinge to door and hinge to doorway jamb.

Crew access doors are each to be provided with a stainless steel spring loaded top door jamb mounted door prop, with stainless steel restraint stop-nut. Door props are to be bolted to reinforced inner plates, not to removable door liners.

DOOR WINDOW

Tempered glass window units shall be provided, at least 20" wide x 32" high, located in the upper portion of the crew cab doors.

The window units shall have black anodized extruded aluminum exterior window frame with interior perimeter clamp-ring surround. Window unit exterior underside flange shall be silicone seal-caulked prior to installation in the window cut-out of the door outer panel. Permanent window units shall have outboard "tinted" (62% light transfer medium gray) tempered glass window panel with vinyl glazing weather-stripping, and continuous formed extrusions with minimum 3" radius corners.

NOISE ISOLATION

Interior cavity of cab crew doors, between outer door panel and removable inner liner, shall be packed with foam soundproofing material.

DOOR LATCHES, 2-POINT ROTARY SLAM, LOCKING STYLE

Each crew cab door shall be equipped with two (1-upper and 1-lower) FVMSS-approved rotary-slam latch mechanisms, connected with mechanical adjustable rods to a single door latch actuator. Door latch actuator shall be of the paddle style, with exterior and opposing lockable interior paddle handles.

WEATHER STRIPPING, REPLACEABLE

Clip-on hollow core neoprene rubber weather stripping shall be installed on perimeter doorway jambs, nylon reinforced web-strap type door stop bolted to door and doorway jamb.

INTERIOR STEP WELLS, 2-LEVEL

Driver's side and passenger's side interior dual level step wells shall be provided, at least 28" wide x 11" deep (front-to-rear), evenly dividing the step height from exterior running board step level to the interior upper floor/walk-way.

The vertical step risers shall be outboard sloping, providing maximum lower stepping surface depth and minimum upper step well depth, while also maintaining maximum interior crew cab floor width (side-to-side). The top step surfaces shall meet NFPA requirements for slip-resistance.

Step surface, back riser, and step well sides shall be bolted in position and easily removable.

STEP LIGHTS

Two (2) each step well mounted 12-volt shielded light fixtures shall be furnished and activated with parking brake.

INTERIOR FLOOR, WALKWAY

The interior crew cab floor shall be at least 69" side-to-side, extending between interior floor level driver's side step riser and passenger's side step riser. Floor plating shall be bolted to the specified crew cab sub-frame cross channels, so as to be no more than 1.5" above the chassis frame rails. The top standing and walkway surfaces shall meet NFPA requirements for slip-resistance.

The interior crew cab floor risers, inner door liners, recessed seat housings, step wells, and pump enclosure shall all be fabricated of natural finish non-painted scuff resistant material.

All fabrications and/or overlays must be bolted in position and easily removable.

NOTE: Permanently welded interior tread-plate overlays or step well and floor fabrications are not acceptable.

CREW CAB SUB-FRAME, STAINLESS STEEL

A crew cab sub-frame shall be furnished, bolted to and removable from the chassis frame rails. Sub-frame shall consist of multiple low-profile fabricated .187" stainless steel transverse channels welded to two (2) longitudinal .25" plate stainless steel fabricated Z-iron chassis frame liners. The sides of frame liners are to be precision machined and bolted to the side web of both chassis frame rails, allowing easy removal of the entire crew cab module from the chassis. Sub-frame assembly shall be prime painted and color coat painted to match the chassis frame rails or the fire pump system. The inboard Z-iron and outboard chassis frame rail mating surfaces shall be coated with ECK corrosion preventative prior to final installation of the sub-frame assembly. The crew cab sub-frame assembly shall be bolted to and provide support for the crew cab front panel, forward cab sides, rear cab sides, optionally specified hose cartridge tunnel, interior forward seat housing, and interior crew cab floor and doorway step well fabrications. Sub-frame's low profile design shall allow for maximum interior crew cab stand-up and walk-through headroom while providing for minimum exterior overall crew cab height.

CREW CAB ROOF CAP: BOLT-ON-REPLACEABLE

The Crew Cab roof cap shall be fabricated construction, with full width front transverse and full length driver and passenger side perimeter, incorporating 45-degree slope outboard top "bevel" corners. The rear of roof cap shall be fabricated with a full width square top outboard corner, providing for a rear facing flat mounting surface for optionally specified light fixtures or traffic bar. The roof cap perimeter fabrications shall be integral with the top roof panel(s). The assembled roof cap with perimeter fabrications shall be bolted to and removable from the front, rear, and side cab panels using concealed stainless fasteners.

The interior under side of crew cab roof cap shall be supported by single piece transverse mounted channel fabricated "crowned" roof bow(s), strategically placed rear of and/or forward of the door openings, designed to provide rigid "walk-on" roof support while allowing for maximum interior floor-to-ceiling head room.

ROOF CAP MATERIAL

The above specified Crew Cab Roof Cap shall be fabricated of polished 4-way aluminum treadplate material. Flanged mating surfaces shall be lined with dielectric barrier tape, prior to bolt-on installation to crew cab front and side panels.

"CURB-VIEW" LOWER DOOR WINDOWS

Tempered glass window units shall be provided matching width to upper windows, by at least 20" high, located: one (1) in the lower portion of each of the crew cab doors.

Window unit construction shall match the specified upper door window units, with black anodized extruded aluminum exterior window frame with interior perimeter clamp-ring surround, silicone seal-caulked prior to installation, with "tinted" tempered glass window panel with vinyl glazing weather stripping. Tinted glass shall be 62% light transfer medium gray

CREW CAB INTERIOR DOOR LINER, STAINLESS STEEL

The specified crew cab door liner(s) shall be constructed of natural finish #4 brushed stainless steel, so as to provide a scuff resistant non-painted surface. Liner to be bolted in position and easily removable for service of the internal door latch mechanisms.

The lower surface of crew cab interior door liners shall have at least 96 sq. in. of reflective material.

CREW CAB INTERIOR DOOR PANEL LED WARNING LIGHTS

Two (2) Red flashing LED warning lights shall be furnished, one (1) per door, recess mounted into the lower trailing/outboard edge of crew cab door interior liner.

Lights to be grommet mount 12-volt, activated by opening of respective cab door.

Flashing warning light to be provided, in addition to NFPA conspicuity material.

ALUMINUM TREADPLATE PUMP PANEL RUNNING BOARDS, CREW CAB

Driver's and passenger's side pump panel running boards are to be furnished, extending from the rear of crew cab door to the front outboard body corners, at a horizontal level "in-line" with the apparatus body side rubrails. Running boards are to be single piece fabrications with double-broke perimeter flanges, and are to protrude outboard of pump panel sides, to the same total width as the apparatus body rubrails (101"). Running board fabrications are to be bolted to the bottom sides of the crew cab/pump module, and furnished with forward, middle, and rearward angular stainless steel under-support brackets.

Running boards are to be constructed of .125" polished 4-way aluminum treadplate, with an NFPA approved non-slip foot grip tread top surface.

PASSAGEWAY TO CHASSIS CAB

A forward crew cab wall "pass-through" opening shall be provided, in line with and similar size to the rear chassis window opening. An aluminum panel ring shall be provided, installed in the place of the original rear chassis cab removed window. The panel ring shall be painted to match job color, installed in the original window rubber setting channel. A clip-on/removable neoprene rubber "accordion" flexible weatherproof boot shall be furnished, attached to rear chassis cab panel ring opening and front crew cab panel cut-out. Weatherproof flexible boot shall perimeter line the pass-through opening, joining at the bottom and adhesive seam sealed.

FORWARD SIDE CREW CAB WINDOWS

The Crew Cab forward side panels shall be equipped with two (2) each, one (1) driver side and one (1) passenger side, upper level vertical window units. Window units are to be only 7” narrower than the front corner side panel width and the same height as upper door windows, provided with tinted glass panels and 3" radius corners.

CREW CAB SIDE WINDOWS

The Crew Cab rear side panels shall be equipped with one (1) driver side and one (1) passenger side windows to rear of cab doors.

Window units to be only 7” narrower than the rear cab side, by maximum height available from top of exterior side pump panel to roof cap (at least 28" tall), provided with tinted glass panels, 3" radius corners, and interior full perimeter clamp-ring surrounds.

SLIDING PANES

Windows shall contain two (2) "tinted" tempered glass window panels with vinyl glazing, dual sliding window pane side up-locks and center closed-latch, slide-up interior lower window screen.

For improved appearance and exterior maintenance, window fasteners shall be located interior cab only.

NOTE: The permanent upper window pane shall be outboard/overlapping the lower sliding window pane, to shed direct or overhead water spray.

GLASS TINT

Glass window units shall have continuous formed extrusions with 3-.187" radius corners. Tinted glass shall be 62% light transfer medium grey.

CREW CAB REAR WINDOW

A rear Crew Cab sliding window unit shall be furnished, installed immediately below the roof cap, equipped with: black anodized extruded aluminum full perimeter exterior window frame, interior full perimeter clamp-ring surround.

SLIDING PANES

Two (2) "tinted" tempered glass window panels with vinyl glazing, dual sliding window pane side up-locks and center closed-latch, slide-up interior lower window screen, and silicone perimeter flange caulking/sealant.

NOTE: The permanent upper window pane shall be outboard/overlapping the lower sliding window pane, to shed direct or overhead water spray.

For improved appearance and exterior maintenance, the window unit clamp ring retainer fasteners shall be located interior cab only.

GLASS TINT

Glass window units shall have continuous formed extrusions with 3-.187" radius corners. Tinted glass shall be 62% light transfer medium grey.

FORWARD STORAGE COMPARTMENTS

Two (2), lower level exterior compartments shall be furnished at lower front cab sides.

Compartments shall be fully enclosed, at least 14" high x 15" wide x 24" deep.

Each compartment door shall be fabricated of polished 4-way aluminum treadplate, flush fit with and "treadplate pattern matching" to the exterior cab corner overlay. Door to be provided with a leading edge mounted vertical polished stainless steel piano hinge and a stainless steel finger-pull D-ring slam latch.

Compartments shall be provided with "wash-out" floors and removable black vinyl sectional floor tiles.

COMPARTMENT INTERIOR LIGHTING

An interior compartment ceiling mounted 12-volt light fixture is to be furnished, activated with park brake.

CREW CAB SPEED-LAY PROVISION

A transverse tunnel shall be furnished immediately to rear of crew cab front wall, above chassis frame.

Tunnel shall accommodate specified removable speed-lay trays.

POLISHED STAINLESS SURROUNDS

Polished stainless steel scuff plating shall be provided, completely surrounding the driver and passenger side tunnel openings, to protect side panels during hose deployment and installation of cartridge hose beds. Scuff plates shall have mitered joints cut to a radius to prevent injury to personal or cleaning equipment.

SPEED-LAY HOSE TRAY(S):

Please refer to the Fire Pump System, for description of the Speed-Lay Hose Trays.

POLISHED ALUMINUM SCUFF PLATING, CREW CAB EXTERIOR

Exterior crew cab 4-way aluminum treadplate overlays (scuff plating), shall be provided, ahead of crew cab door(s), wrapping around front outboard corners.

CEILING LINER MATERIAL, CARPET COVERED FOAM

The interior crew cab ceiling shall be lined with black/silver carpet covered 1" foam cushion sound dampening material. Carpet cushion material to be spray adhesive installed on underside flat metal surfaces and trimmed with black coated aluminum fabrications, bolted in position and removable. Roof bow covers shall be provided, to hold the individual ceiling liner panels in position and provide mounting panels for the specified interior crew cab overhead light fixtures.

INTERIOR CREW CAB CEILING SOUNDPROOFING

The crew cab underside roof (ceiling) shall be soundproofed using self-adhesive Antiphon-13 sound dampening pad. Sound dampening pad shall be applied to the flat metal surfaces (after painting), to prevent noise caused by metal reverberation. Antiphon-13 sound dampening pad shall be applied prior to installation of the above specified ceiling liner material, sandwiched between the structural metal and the headliner material.

WALL LINER MATERIAL, CARPET COVERED FOAM

The crew cab interior walls shall be lined wit gray/black carpet covered 1" foam cushion material. Carpet cushion material to be attached with spray adhesive, installed on all flat metal surfaces, including: full width and height of front panel (around pass-through) and full height and width of side panels (around windows). All interior carpet cushion material corner seams shall be covered with black coated aluminum fabrications, bolted in position and removable.

Where ceiling liner is a matching carpet cushion material, black coated aluminum fabrications shall be provided, that retain the ceiling liner material and completely cover the roof support bows.

The doorway surround jambs shall be trimmed, on the interior of crew cab, with treadplate aluminum fabrications. Interior doorway trim fabrications shall cover the door hinge fasteners and wiring looms.

INTERIOR CREW CAB WALLS, SOUNDPROOFING

The crew cab interior metal walls shall be soundproofed using self-adhesive Antiphon-13 sound dampening pad. Sound dampening pad shall be applied to the flat metal surfaces (after painting), to prevent noise caused by metal reverberation. Antiphon-13 sound dampening pad shall be applied prior to installation of the above specified wall liner material, sandwiched between the structural metal and the wall liner.

SOUND TESTING

At any seat location, the maximum interior noise level shall not exceed 84 DBA with vehicle traveling 45 MPH without audible warning devices in operation.

Prior to delivery, the interior crew cab areas shall be "SOUND TESTED" with the specified siren, air horns, and other audible emergency warning devices in operation at normal highway speeds. Additional sound tests shall be provided with chassis cab windows open, crew cab and/or chassis windows open, with and without audible equipment in operation. Sound test results/verifications shall be provided to the Purchaser upon completed delivery.

ALUMINUM TREADPLATE FLOOR, NFPA PATTERN

The interior floor surface of the crew cab shall be fabricated of minimum .125" polished 4-way aluminum treadplate material, with an NFPA approved slip resistant pattern. Treadplate floor and step well fabrications are to be bolted in position and easily removable, using through bolts and self-locking nut fasteners. Riveting, tapped screws, threaded inserts, or permanent welding of the fabrications into position will not be acceptable.

COMBO AIR CONDITIONER-HEATER

A Red Dot R-2300-2P or equal 17,700 BTU Cooling/32,000 BTU Heating combination heater and air conditioner evaporator shall be furnished, complete with: engine coolant heater lines extending from engine compartment to heater core, air conditioning refrigerant lines extending from chassis air conditioning system to evaporator.

STEP WELL HEATER

For optimum heating, combination evaporator/heater core units with air ducts and multiple 12-volt squirrel cage fans, dual evaporators, and condensation drains shall be installed under specified cab step(s).

CONSOLE AND DASH MOUNTED VENTS

Four (4) 6" diameter swiveling vents shall be installed around control console to provide warm or air conditioned air for cab heat, cooling, and defrost. Ventilation tubing and duct work shall be completely concealed from view.

CONCEALED HEAT AND A/C LINES

Refrigerant / heater coolant hoses and air ducts, where inside cab, shall be fully enclosed inside black (to match interior wall liner) vinyl coated aluminum fabrications.

PANEL MOUNTED CONTROLS

Cooling and heating temperature shall be controlled by interior cab panel mounted heater/air conditioning controls.

HEATER LINES

Hot water heater to be piped to chassis engine cooling system "downstream" of interior chassis cab heater.

GATE VALVES

Heater lines to be gated to prevent loss of engine coolant in the event of ruptured cooling line and also to allow shut down of heating system during summer time operations.

OVERHEAD CABINETS

Two (2) each, ceiling cabinets shall be furnished, mounted outboard on front interior crew cab wall.

Cabinets to be fabricated of smooth aluminum with DA finish, 20" wide x 12" high x 12" deep, equipped with matching overlapping lift-up doors, air cylinder door lifts, and stainless steel D-ring quarter-turn latch.

CABINET LIGHTING

Interior, of overhead cabinets, shall have a single ceiling mounted 12-volt LED light that is activated by park brake.

OVERHEAD LED LIGHTING, COMBO RED/WHITE

Two (2) each 12-volt LED overhead ceiling strip light is to be furnished, mounted to underside of the specified interior roof support shroud. Lights are to have combination White/Red LED's, to allow for glare-free Night Lighting

Lighting is to be activated by door jamb plunger switches and an interior crew cab mounted back-lit rocker switch.

CREW CAB EXTERIOR ILLUIMINATON, 12-VOLT LED FIXTURES

Two (2) each, 1-Driver's and 1-passenger's side interior stepwell mounted chrome plated 12-volt LED light fixtures shall be furnished, "ON" with chassis cab head lights, so as to provide stepwell lighting with doors opened or closed.

Two (2), 4" round under body 12-volt LED ground lights to be furnished, located: beneath each crew cab access door.

Lights to be grommet mount, completely sealed for weather resistance, lenses to be 4" diameter Clear.

Lights to be activated application of the vehicle park brake.

REAR FACING SCBA SEATS, THREE (3) EACH

Three (3) each, rear facing SCBA seats shall be provided at front of crew cab.

Bostrom "SecureAll" Tanker 400CT "black" Durawear covered recessed SCBA back crew seats shall be provided, mounted to a platform above the specified speed-lay module.

The seats shall include: overhead head rest, occupant sensor, tapered bottom cushion, sculptured back rest cushions, and SecureALL quick-release tank retainer with yellow grab-bar seat cushion recessed trigger.

The individual seat assemblies shall be evenly spaced within the mounting area, so as to provide for comfortable 29"+ wide seating positions.

Red (contrasting color) DOT approved vinyl retractable lap style seat belt assemblies are to be furnished, for each seating position.

HELMET HOLDERS, STAINLESS STEEL

The three (3) driver and passenger seats in the chassis and/or crew cabs shall each be assigned, and interior(s) equipped with a custom-built helmet holder, designed to accommodate the single brand of helmet as designated by the customer. Helmet holders shall be fabricated of 12-gauge stainless steel, equipped with a stretch cord retainer, and located as instructed by the customer and approved by NFPA.

ACCESSORY ADJACENT TO TOP-MOUNT PUMP CONTROLS

In addition to the interior crew cab pump operator's controls, the following optional accessory is to be provided.

EMS CABINET, ADJACENT TO PUMP OPERATOR'S CONTROL CONSOLE

One (1), fully enclosed EMS compartment shall be furnished, located adjacent to, driver's side of, the specified interior crew cab pump operator's control console. EMS compartment to be approximately 18" wide x 28" high x 24" deep, fabricated of polished aluminum treadplate and equipped with a vertically hinged aluminum treadplate overlapping door (opening inboard into walkway area) and a single stainless steel large D-handle latch assembly.

LED EMS COMPARTMENT INTERIOR LIGHTING

A 12-volt LED interior EMS compartment light fixture is to be provided, interior of the EMS compartment. Light fixture is to illuminate with application of the vehicle's park brake.

PAINT PROCESS

Exterior Crew Cab surfaces to be painted shall be cleaned using DX436 wax and grease remover. Then the entire surface shall be sprayed with F3993 Epoxy Primer which exhibits very good adhesion and corrosion resistance. A high build primer surfacer, F3975, will then be applied directly over the primer. After allowing the primer surfacer to air dry, the entire unit will be sanded using dual action sanders with 320 grit sand paper leaving a very smooth surface to be painted.

The paint applied to the apparatus shall be PPG Industries Delfleet® Evolution brand, applied throughout a multi-step process including at least two coats of each color and clearcoat finish.

Special attention will be given to proper application of coatings according to the specified film build (wet and dry) recommendations of PPG. Product or technical data bulletins should be consulted for any needed information above that which has been outlined herein. All paint materials shall be prepared and applied in accordance with this specification and the paint manufacturer's latest written recommendation prior to paint application.

The coating shall be baked or air dried. The coatings shall provide full gloss when finished curing and must be suitable for application by conventional pressure air atomizing spray.

Body panels and sub-frame area which cannot be painted after assembly shall be pre-primed and painted prior to main painting process.

The coatings shall not contain lead, cadmium or arsenic. The polyiscoyanate component shall consist of only aliphatic isocyanates, with no portion being aromatic isocyanate in character. The solvents used in all components and products shall not contain ethylene glycol, mono-ethyl ethers, or their acetates (commercially recognized as Cellosolves), nor shall they contain any chlorinated hydrocarbons. The products shall have no adverse health effects or present any unusual hazard to personnel when used according to manufacturer's recommendations for handling and proper protective safety equipment, and for its intended use.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The painted surfaces shall receive the same primer coats and the finish coats. These painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects.

HIGH LUSTER BUFFING
The specified color painted components shall be "wet" color sanded with ultra-fine media, machine buffed with rubbing compound and wool pad, machine buffed with glaze and foam pad, and hand wiped to remove residue.

PAINT COLOR
Finish color of the apparatus body exterior and painted accessories shall be of a single color to match major chassis cab exterior color.

Crew Cab sub-frame and pump mounting brackets shall be Black.

CREW CAB RE-ASSEMBLY
During reassembly of all individually painted fabricated components, special care shall be taken to prevent deterioration of top paint coats of mating flanged areas. Fabricated accessory components, which have been removed prior to painting, shall be seal coated where mated to dissimilar metal painted components. Accessory fabrications to be installed using stainless steel button socket head cap screw fasteners. Edges of accessories, where meeting exterior body painted fabrications, shall be properly caulked with G.E. or equal silver metallic body sealant to prevent moisture accumulation between metal layers.

TOUCH-UP PAINT
One (1), full quart of original finish color top coat paint material shall be provided for use as future touch-up paint.

PUMP WARRANTY

Please refer to the specification Warranty Section, for Waterous Fire Pump Warranty being furnished.

FIRE PUMP SYSTEM

PUMP AND PUMP TRANSMISSION

PUMP
A 1500 gallon per minute, Waterous model CSUC20-1500, Class A, single-stage centrifugal iron body - rear drive fire truck pump is to be furnished, mounted "mid-ship" of the vehicle immediately ahead of the compartments and water tank. The pump transmission gear ratio must allow the pump to deliver the percentage of rated capacity at discharge pressures indicated below, while the drive engine is running in its peak performance range/RPM:

100 percent of rated capacity at 150 pounds net pressure
100 percent of rated capacity at 165 pounds net pressure
70 percent of rated capacity at 200 pounds net pressure
50 percent of rated capacity at 250 pounds net pressure

PUMP TRANSMISSION
Pump transmission to be Waterous C-20, "chain-drive" style to provide smooth quiet transmission of power. Transmission "drop" shall be of proper dimension to allow for optimum driveline angles.

Extra heavy duty 2.35" x 46" involute spline pump driveline to be furnished for high torque engine applications.

SEPARABLE IMPELLER SHAFT
A separable impeller shaft will be furnished to allow removal of the pump transmission, separate from the pump body, while the pump body remains undisturbed on the apparatus

ADDITIONAL FEATURES
Additional pump features will include: dual-suction bronze replaceable impeller and impeller seal rings, stainless steel impeller shaft, grease lubricated front and oil lubricated rear roller bearings, and horizontally split main pump body, and all moving parts which come into contact with water are to be bronze or stainless steel.

IMPELLER HUBS
Flame plated impeller hubs shall be furnished along with labyrinth style seal rings.

MANUFACTURER HYDRO TEST
The pump is to be performance tested by Waterous, at the above pressures and capacities, and also 10 minutes hydrostatically at a pressure of 600 PSI. Certification by Waterous is to be provided in delivery manual.

OEM PERFORMANCE TEST

Apparatus Manufacturer's pump performance test is to be performed after construction. Factory certification to be provided in delivery manual.

PUMP TEST DATA PLATE, SINGLE-STAGE PUMPS

The pump operator's panel will be provided with a metal plate listing the rated flow performance demonstrated together with the RPM of the engine at said pressures and deliveries, and mounted in clear view of the pump operator's panel. Test plate shall also indicate pump serial number, engine governed speed, and pump to engine gear ratio.

PUMP INSTRUCTION MANUALS

Two (2), Waterous Operator's Manuals, both in digital CD format, are to be provided upon delivery of the apparatus. Manuals to be pump model and serial number specific, to include but not be limited to operation procedures, maintenance (lubrication), and illustrated parts break-downs.

PUMP SEALS

"Mechanical" pump seal assemblies to be furnished, with the specified full-body centrifugal pump, self-adjusting type, maintenance free.

PNEUMATIC PUMP SHIFT

The pump shift is to be pneumatically operated using a standard automotive air valve to control a double action air shift cylinder, designed so that the pump shift remains in its latest position in the event of loss of air pressure. Shift engagement is to be provided by free-sliding shift collar with internal locking mechanism.

Pump transmission's pneumatic power shift mechanism and the Pump Shift Console are to be plumbed to the chassis air system, downstream of the vehicle Air Pressure Protection System, using high pressure nylon tubing and brass fittings.

SHIFT CONSOLE, COLLAR-LOCK LEVER STYLE

Pump Shift Engagement Control will include: air control lever with spring loaded locking collar to prevent it from accidentally being moved from the "ROAD" or "PUMP" position, "PUMP ENGAGED" light indicating mechanical shifting of the pump into the "ROAD" position has been accomplished, "O. K. TO PUMP" light to indicated chassis transmission is in the correct pumping gear, and a control plate describing operation of the pneumatic power shift assembly.

An additional indicator light to be furnished on pump control panel, adjacent to, or integral with, engine throttle, to indicate that the vehicle transmission is in the proper gear and driveline is rotating: "O. K. TO PUMP".

Pump transmission's pneumatic power shift mechanism and the Pump Shift Console are to be plumbed to the chassis air system, downstream of the Pressure Protection System, using high pressure nylon tubing and brass fittings.

The OK to Pump indicator lights, inside the chassis cab and at the pump operator's control panel are to be furnished with circuit protection, wired to and activated by the vehicle transmission position and pump shift signals.

TRANSMISSION LOCK-UP

The direct gear (1:1 ratio) vehicle transmission lock-up for the fire pump operation is to engage automatically when the pump shift control, in the cab, is activated.

PUMP TEST DATA LABEL

The pump control panel is to be provided with a printed data field indicating the rated flow at 150, 165, 200 and 250 test pressures, together with the RPM of the engine at those pressures and deliveries. Test Label is to be mounted in clear view of the pump operator's position, as per NFPA 1901 compliance.

Test label is to also indicate the following information:
Pump Make and Model
Pump Capacity
Apparatus Date of Manufacture
Apparatus Model Designation
Apparatus Serial Number
Apparatus Production Number
Engine Governed Speed
Pump Transmission Gear Ratio (to Engine)

Data field is to be permanently encased in a chrome full surround bezel.

GATED INLET WARNING LABEL(S)

WARNING:

Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

AUXILIARY COOLING SYSTEM-GATED

A supplementary heat exchanger system is to be installed on the apparatus. The heat exchanger is to be installed inside the pump or engine compartment, controlled from the pump operator's panel, and labeled to identify its operation. The heat exchanger system is to be so designed as to allow for cold water from the discharge side of the fire pump to circulate through the heat exchanger tubes. The mixing of discharge water and radiator anti-freeze in the chassis engine must not occur as the heat exchanger is to be a closed system. Piping from the fire pump to the heat exchanger, and return (to pump Master Drain suction port), is to be with high pressure line. Pressure line (from pump discharge) to be gated, with a Class-1 1/4-turn .375" ball valve control on pump control panel, with instructional nameplate.

PUMP DRAIN MANIFOLD

Waterous manifold drain valve, with bronze body and stainless plunger shall be furnished mounted on pump transmission and operated by a push-pull cable with chrome plated T-handle control on pump panel. Drain valve shall be piped with high pressure nylon tubing, to low points of pump suction and discharge cavities to allow simultaneous draining through a single drain valve.

INTAKE RELIEF VALVE, 2.5" BRONZE

An Elkhart bronze pump suction intake relief valve shall be furnished, installed inside pump compartment, flange bolted or threaded to suction cavity of the fire pump. Valve to be of the pre-set (to 125 PSI) adjustable bypass design, to dump below the vehicle excessive inlet water pressure. Relief valve to be accessible for future adjustment of bypass pressure.

INTAKE RELIEF VALVE, WITH DISCHARGE OUTLET HOSE

The specified fire pump suction manifold Intake Relief Valve's outlet is to terminate with a 2.5" i.d. flexible hose, outlet located at side of apparatus, away from the fire pump operator's location.

PRESSURE GOVERNOR AND MONITORING DISPLAY

Fire Research PumpBoss model PBA400-A00 pressure governor and monitoring display kit is to be provided and installed. The kit is to include a control module, pressure sensor, and cables. The control module case is to be waterproof and have dimensions not to exceed 6 .75" high by 4 .625" wide by 1 .75" deep. Inputs for monitored information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring.

FUNCTION INDICATORS

The following continuous displays shall be provided:

- CHECK ENGINE and STOP ENGINE warning LEDs
- Engine RPM; shown with four daylight bright LED digits more than .5" high
- Engine OIL PRESSURE; shown on an LED bar graph display in 10 PSI increments
- Engine TEMPERTURE; shown on an LED bar graph display in 10 degree increments
- BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 -Volt increments
- PSI / RPM setting; shown on a dot matrix message display
- PSI and RPM mode LEDs
- THROTTLE READY LED.

MESSAGE DISPLAY
A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

The program shall store the accumulated operating hours for the pump and engine, previous incident hours, and current incident hours in a non-volatile memory.

Stored elapsed hours shall be displayed at the push of a button.

It shall monitor inputs and support audible and visual warning alarms for the following conditions:
- High Engine RPM
- High Transmission Temperature
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Battery Voltage
- Low Engine Oil Pressure
- High Engine Coolant Temperature

CONTROL MODES
The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.

THROTTLE INDICATOR
A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle.

PRESSURE CONTROL
In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator.

ENGINE RPM CONTROL

In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase.

The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 PSI. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

ENGINE APPLICATION
The pressure governor and monitoring display shall be programmed for Cummins IS series engines.

LOCATION
Location of the governor and monitoring display shall be at pump operator's panel.

FLAME PLATED IMPELLER HUBS

Flame plated impeller hubs shall be furnished, on specified midship style pump, along with labyrinth style seal rings.

PRIMER PERFORMANCE REQUIREMENTS

The pump shall be capable of taking suction and discharging water with a lift of 10’ in not more than 30 seconds with the pump dry, through 20’ of suction hose of appropriate size. It shall be capable of developing a vacuum of 22" at an altitude of up to 1000’.

WATEROUS VPOS PUMP PRIMER

A high capacity positive displacement self-lubricating priming system shall be furnished, consisting of: a Waterous VPO "oil-less" rotary vane priming pump with 12-volt electric motor drive, and a push-button priming valve actuator on pump operator's panel. Priming pump shall be mounted beneath fire pump.

WATEROUS VAP VACCUM ACTIVATED PRIMING VALVE

There shall be a Waterous model VAP vacuum activated priming valve supplied with the pump. The valve shall open automatically when the priming system is activated. The valve shall be installed on the pump or mounted remotely.

PRE-PRIME - REAR SUCTION

A rear suction inlet "pre-prime" system shall be furnished, consisting of: one (1) remote mounted electric priming valve assembly, non-collapsible vacuum hose between priming valve and above specified priming pump, non-collapsible

vacuum hose between priming valve and rear suction inlet (upstream of gate valve), and operator's panel mounted push button control with nameplate. Installation of this priming valve assembly shall allow "pre-priming" of the rear suction with its gate valve closed.

HEAT ENCLOSURE, ALUMINUM

A removable heater casing is to be furnished, completely enclosing the underside of the fire pump compartment module. Heater casing side and end panels are to be fabricated entirely of natural finish smooth sheet aluminum, bolted to and easily removable from the bottom perimeter of the pump module. So as to allow maximum ground clearance, the heater casing shall be the minimum depth required to enclose the pump transmission, horizontal engine exhaust system, and all pump accessories. Two (2) individual smooth aluminum slide-out bottom panels are to be furnished, criss-cross reinforced with drain holes and ¼-turn butterfly clamp latch, removal of which allows for inspection of and access to the fire pump and chassis components, NOTE: A center bottom slide-out panel brace shall be furnished, off-set to one side so as to not obstruct the pump transmission lubricating fluid drain.

PUMP TEST. PRELIMINARY AND FINAL CERTIFICATION TESTING

After a "preliminary" apparatus factory performance test, the above specified pump test/certification is to be performed by apparatus manufacturer and "witnessed" by an independent third party as per NFPA 1901 pumping standards, with proper serialized certification provided upon apparatus delivery.

STAINLESS STEEL TUBULAR PUMP SUCTION INLET AUXILIARY PIPING

Suction manifolds, where not part of and integral with the pump manufacturer's pump intake castings, shall be fabricated of **"tubular"** stainless steel ONLY, schedule 10 or schedule 40 wall thickness, type 304L.

NOTE: Due to the poor flow characteristics, a suction manifold fabricated of square or rectangular tubing with flat-mount weld spuds and/or riser pipes for auxiliary suction taps, is not an acceptable substitute to a tubular manifold.

All suction manifolds and fittings, and suction valves, tubing's, and hose line assemblies shall be pressure tested after installation.

ANODE, PUMP SUCTION MANIFOLD

One (1) sacrificial zinc anode shall be furnished in the water pump inlet manifold, to protect the pump from corrosion.

PUMP SUCTION INLETS

Following specified pump manifold inlets shall be equipped with zinc die cast screens so as to provide cathode protection for pump waterways.

All intakes shall be furnished with suitable closures capable of withstanding 500 PSI, threaded caps shall be chrome plated brass, rocker lug 3" and smaller, long handled larger than 3".

SUCTION INLET VALVE STANDARDS (WHERE OPTIONALLY SPECIFIED)

Following optionally specified 3" or larger gated intakes (except the tank-to-pump intake) shall include a remote controlled valve mechanism that shall not permit changing the position of the flow regulating element of the valve from full close to full open, or vice versa, in less than 3 seconds. Where air type actuators are employed, they shall include dual (2-each) adjustable needle valve restrictors, bench set/tested, so as to facilitate the slow movement. Where manual gear or electric gear style actuators are employed, the crank or motor shall regulate movement speed.

SHORT SUCTION TUBE

The specified side pump suction inlet(s) shall be of minimum length to allow for exterior stacking of adapters or pre-connected hose.

INLET BLEEDER VALVES

Where specified, each gated intake shall be equipped with a bleeder valve located inside pump compartment (inside rear compartment-for rear suctions), upstream gate valve, with remote bleeder control in close proximity to the intake. The gated inlet bleeders shall consist of: .75" high pressure flexible hose assemblies extending between suction valve and bleeder valve, .75" cast bronze or stainless steel bleeder valve, exterior bleeder valve control handle, and an engraved or printed identification label. Bleeder controls for side gated inlets are to be located below the inlet, in a single row immediately above the running board/floor level. Bleeder controls for optionally specified rear inlets are to be located below the inlet, above the tailboard level. The bleeder valves shall be Innovative Control, “lift-handle” style equipped with chrome plated lever control handles, which are in the down position when closed.

HOSE THREADS

Where specified, all screw-on/off threads shall be NST (National Standard Threads), all "sexless" couplings shall be Storz.

SELF BLEEDING SUCTION CAPS

The specified "threaded" suction caps shall be the VLH Class-1, Trident or equivalent which incorporates a cross-machined thread design to automatically relief stored pressure in the line during un-capping.

PUMP OVERHEAT PROTECTION

One (1), Waterous Overheat Protection Manager (OPM) model #82516-1B, thermal relief style valve to be furnished, installed on the two .5" tapped holes located near the center discharge area of the pump. The OPM consists of a valve that automatically opens when the water in the pump reaches 140 degrees and a warning light located on the pump operator's panel that is triggered by a thermal switch when the water in the pump reaches 180 degrees. The warning light acts as an additional protection device if the temperature inside the pump keeps rising although the valve is open. The OPM valve and switch are both mounted on the two (2) .5" tapped holes located near the center discharge area of the pump. Discharge shall be "to ground".

The warning light and test button shall be mounted to a heavy polished casting that is mounted to the pump operator's panel.

ALL DISCHARGE VALVES ARE TO BE WATEROUS BRAND

All 2.5" and 3.5" discharges are to be equipped with Waterous brand, ball style, in-line valves. The valves shall be equipped with chromium-plated bronze ball and a "spring-loaded" seal assembly, no lubrication or regular maintenance shall be required on the Waterous valves.

PASSENGER SIDE SUCTION(S)

6" NST GATED MASTER SUCTION, ELECTRIC ACTUATED

A passenger's side gated 6" pump suction intake to be furnished with: 6" removable zinc strainer, 6" NST male inlet adapter, 6" extension nipple (extending through pump panel), 6" ASA threaded flange, bronze bleeder valve located inboard pump panel with remote control handle, 6" Akron butterfly style gate valve with "slow operating" 12-volt electric actuator (with rotating hex over-ride), and appropriate interior pump compartment 6" ASA flanged pump intake fitting. Inlet is to have minimum extension outboard the pump panel.

ELECTRIC VALVE CONTROLLER

The master suction intake valve is to be controlled by an Akron model 9323 Navigator Pro control console with protected switch and multiple position indicator lights. Controller is to be located on the pump operator's panel.

SUCTION CAP, LONG HANDLED, 6" NST

One (1) each 6" NST vented long handled chrome plated suction cap.

SUCTION INTAKE RELIEF VALVE - INBOARD PASSENGER SIDE PUMP PANEL

One (1) Elkhart adjustable bronze suction intake relief valve(s) shall be furnished, enclosed inboard the passenger's side pump panel. Intake relief valve to be located upstream of the above specified butterfly style gate valve, "sandwiched" between gate valve and specified external inlet fitting. Intake relief valve shall be mounted so as to self-drain and dump excessive suction inlet pressure below the pump compartment.

REAR SUCTION

PUMP INTAKE ADAPTER
The mid-ship mounted fire pump is to include a 5" ASA rear suction cast iron intake adapter configured for use with the optionally specified rear suction butterfly valve and upstream rear suction inlet piping. Intake adapter is to be positioned to allow for the specified rear suction piping to be low profile, overhead the chassis frame rail.

6" NST REAR SUCTION, GATED 5", REMOTE 12-Volt ELECTRIC CONTROLLED

A rear gated pump suction intake to be furnished with: 6" NST long handled suction cap, 6" removable zinc strainer, 6" NST male inlet adapter, 5" i.d. schedule-10 STAINLESS STEEL suction intake pipe extending from rear inlet adapter to pump suction fitting, 5" Victaulic clamp coupler(s), 5" ASA stainless steel flanged nipple, 5" Akron butterfly style gate valve with "slow operating" 12-volt electric actuator and operator's panel mounted Akron model 9323 Navigator CAN networked Valve Controller with color LCD Valve Position Indicator. Bronze bleeder and drain valves located where necessary. Where 45-degree or greater weld elbows are necessary/furnished, they are to be short-radius type 304 stainless steel (off-set miters are only allowed for lesser than a 45-degree angle).

Rear suction inlet is to be located passenger's side rear exterior of body, approximately 22" above the rear tailboard.

GATED REAR SUCTION INTAKE RELIEF VALVE

An Elkhart adjustable bronze rear suction intake relief valve shall be furnished installed on the rear suction piping (upstream of the rear suction valve) located inboard the exterior rear body panel. Intake relief valve to be of the pre-set

adjustable bypass design, mounted so as to self-drain, and furnished with appropriate discharge piping to dump below the vehicle any excessive rear suction inlet water pressure.

DRIVER'S SIDE SUCTION(S)

6" NST GATED MASTER SUCTION, ELECTRIC ACTUATED

A driver's side gated 6" pump suction intake to be furnished with: 6" removable zinc strainer, 6" NST male inlet adapter, 6" extension nipple (extending through pump panel), 6" ASA threaded flange, bronze bleeder valve located inboard pump panel with remote control handle, 6" Akron butterfly style gate valve with “slow operating" 12-volt electric actuator, and appropriate interior pump compartment 6" ASA flanged pump intake fitting. Inlet is to have minimum extension outboard the pump panel.

ELECTRIC VALVE CONTROLLER

The master suction intake valve is to be controlled by an Akron model 9323 Navigator Pro control console with protected switch and multiple position indicator lights. Controller is to be located on the pump operator's panel.

SUCTION CAP, LONG HANDLED, 6" NST

One (1) each 6" NST vented long handled chrome plated suction cap.

SUCTION INTAKE RELIEF VALVE - INBOARD DRIVER SIDE PUMP PANEL

One (1) Elkhart adjustable bronze suction intake relief valve(s) shall be furnished, enclosed inboard the driver's side pump panel. Intake relief valve to be located upstream of the above specified butterfly style gate valve, "sandwiched" between gate valve and specified external inlet fitting. Intake relief valve shall be mounted so as to self-drain and dump excessive suction inlet pressure below the pump compartment.

3.5" WATEROUS SUCTION VALVE, HIGH-FLOW

A 3.5" full-flow Waterous tank-to-pump 1/4-turn valve to be furnished with chrome plated bronze ball, spring loaded seal assembly, and inlet hose connection. The gated suction line/piping from specified tank sump to the tank-to-pump valve shall be furnished with reusable screw-banded flexible "hump hose" connection and 4" i.d. stainless steel piping enclosed within the fire pump compartment. Tank-to-pump suction line design and size shall allow a flow rate of at least 700 GPM. (200 GPM in excess of NFPA minimum requirement).

NOTE: Plastic or PVC tubing is not an acceptable alternative to stainless steel piping.

TANK-TO-PUMP CHECK VALVE

Waterous bronze tank-to-pump suction check valve to be furnished, integral with fire pump main body casting, full-flow design to prevent obstruction of suction waterway (available on CS and CM pumps only). Check valve shall prevent high capacity "back-flow" of water from the pump-to-tank, if the tank suction valve is inadvertently left open.

TANK-TO-PUMP LOCKING CONTROL, "PULL TO OPEN"

Specified tank-to-pump suction valve is to be remote controlled with lever style valve actuator and a manual push-pull style operator's panel Piston-Grip control, with trigger style locking control handle. The tank-to-pump suction valve control is to be "In-Closed" and "Out-Open".

TANK REFILL, 2" WATEROUS BALL VALVE

One (1), gated 2" tank fill discharge line, extending from pressure side of fire pump to water tank is to be furnished, with: female TIPT tank fill spud located in upper portion of water tank, high pressure wire reinforced 2" hose with stainless steel grooved Victaulic end couplings, 2.5" Waterous ball style discharge valve configured for manual valve control located on the pump operator's control panel, and a nameplate to read: "**TANK FILL**".

WATER TANK REFILL CONTROL, "PULL TO OPEN", TOP-CONTROL PANEL

Specified water tank refill discharge valve is to be remote controlled with lever style valve actuator and a manual push-pull style operator's panel Pistol-Grip control, with trigger style locking (for throttling) control handle. Tank refill valve control is to be "Rearward (push)-Closed" and "Forward (pull)-Open".

TANK RECIRCULATING - PUMP COOLER

One (1), gated .375" pump recirculating/cooling line, from pressure side of fire pump to water tank top to be furnished with: .375" female TIPT spud located at top front of water tank, high pressure tubing, and .375" bronze body 1/4-turn ball style valve with chrome handle located on operator's control panel. Valve is to be identified as pump cooling line.

PUMP DISCHARGE OUTLET CONTROLS AND ACTUATORS

All discharge valves shall have operating controls and actuators that allow the valve to be positioned incrementally from closed to full open, and locked in any selected position. Each valve control is to be adjacent to its respective pressure instrument.

Each of the specified 3" diameter or larger discharge valves are to have an operating mechanism which shall not permit changing the position of the flow regulating element of the valve from full close to full open, or vice versa, in less than 3 seconds.

DISCHARGE OUTLET BLEEDERS

Each of the following specified gated discharges shall be equipped with a "discharge outlet bleeder". The outlet bleeders shall consist of: .75" high pressure flexible hose assemblies extending between discharge valve and bleeder valve, .75" cast bronze or stainless steel bleeder valve mounted interior of pump compartment (inside rear compartment-for rear discharges), exterior bleeder valve control handle, and color coded (to match corresponding discharge outlet) engraved or printed identification label. Bleeder controls for side discharges are to be located below the outlet, in a single row immediately above the running board/floor level. Bleeder controls for optionally specified rear discharges are to be located below the outlet, above the tailboard level. The bleeder valves shall be Innovative Control, “lift-handle” style equipped with chrome plated lever control handles, which are in the down position when closed.

HOSE THREADS

Where specified, all screw-on/off threads shall be NST (National Standard Threads), all "sexless" couplings shall be Storz.

PUMP FITTINGS AND "ROUND TUBULAR" 304L S/S DISCHARGE MANIFOLD

The above specified fire pump shall be furnished with high-tensile closed grain cast iron "bolt-on" left and/or right side discharge fittings (upstream of discharge valves only) and cast iron "bolt-on" left side, right side, and/or front/rear large diameter suction intake adapters, as furnished and flow/pressure tested by the fire pump manufacturer.

A type 304L stainless steel **"round tubular"** discharge manifold shall be furnished, flange bolted or Victaulic clamped to and easily removable from, the fire pump's large diameter discharge outlet taps.

NOTE: Due to the likelihood of high pressure deformation (regardless of wall thickness), manifolds fabricated of square or rectangular tubing's, are not acceptable

The tubular manifolds main waterway shall be commensurate in diameter to feed the quantity and size of auxiliary discharge line "branches". So as to provide unsurpassed flow characteristics, all auxiliary branch reducers shall be concentric bell reducers, and all couplings and risers shall be "coped" to conform to the radius of the larger size feed

waterway. Flat-mount weld spuds and non-coped risers welded to rectangular fabrications and end plates are not acceptable.

All stainless steel welding shall be TIG, to assure proper penetration and conformity with original tubing and weld fitting outside diameters. All elbows shall be smooth sweep weld fittings.

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See following specifications describing the number/size/locations of outlet gate valves to be furnished.

Heavy wall threaded pipe and pipe fittings shall be used, wherever possible, downstream of the specified side outlet and top deluge discharge valves.

All flexible discharge lines and bleeder lines, downstream of respective valves, shall be reinforced high pressure hose assemblies with stainless steel or brass end fittings.

Pressure gauge tubing lines shall be clear polypropylene with brass fittings, manifold drain lines (that are not high pressure hose assemblies) shall be copper tubing.

All discharge manifolds and fittings, suction manifolds and fittings, discharge and suction valves, tubing's, and hose line assemblies shall be pressure tested before and after installation.

PASSENGER SIDE LARGE DIAMETER DISCHARGE

One (1), passenger's side 4" gated discharge to be furnished with: 2.5" NST chrome plated brass rocker lug cap with chain, 2.5" NST male x 5" Storz lightweight adapter, 5" Storz x 4" NST swivel female 30-degree elbow lightweight outlet adapter, 4" NST Male x 4" NPT Female adapter, 4" i.d. extension nipple (extending through pump panel), bronze bleeder valve located inboard pump panel with remote control knob adjacent to discharge outlet, 3.5" Waterous "ELECTRIC ACTUATOR OPERATED" 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), operator's panel mounted valve control console with spring loaded open/close and appropriate cast iron pump discharge fitting.

REAR DISCHARGE(S)

REAR PASSENGER SIDE 2.5" GATED DISCHARGE, 2.5" NST

One (1), rear (passenger's side) 2.5" gated discharge to be furnished with: 2.5" NST chrome plated brass rocker lug cap with chain, 2.5" NST male x 2.5" NST rocker lug swivel female 30-degree chrome plated brass elbow extension, 2.5" NST male chrome plated brass outlet adapter, .75" bronze bleeder valve with exterior control, 2.5" i.d. stainless steel pipe or wire reinforced hose assembly with 2.5" stainless end fittings, 2.5" Akron 8000 series ball style 1/4-turn self-locking

full flow bronze bodied discharge valve with R-1 valve handle (located inside pump enclosure) configured for manual push-pull control located at the pump operator's control panel.

REAR DRIVER SIDE 2.5" GATED DISCHARGE, 2.5" NST

One (1), rear (driver's side) 2.5" gated discharge to be furnished with: 2.5" NST chrome plated brass rocker lug cap with chain, 2.5" NST male x 2.5" NST rocker lug swivel female 30-degree chrome plated brass elbow extension, 2.5" NST male chrome plated brass outlet adapter, .75" bronze bleeder valve with exterior control, 2.5" i.d. stainless steel pipe or wire reinforced hose assembly with 2.5" stainless end fittings, 2.5" Akron 8000 series ball style 1/4-turn self-locking full flow bronze bodied discharge valve with R-1 valve handle (located inside pump enclosure) configured for manual push-pull control located at the pump operator's control panel.

DRIVER'S SIDE DISCHARGE(S)

DRIVER SIDE 2.5" GATED DISCHARGE, 2.5" NST

One (1), driver's side 2.5" gated discharge to be furnished with: 2.5" NST chrome plated brass rocker lug cap with chain, 2.5" NST male x 2.5" NST rocker lug swivel female 45 degree chrome plated brass elbow outlet extension, 2.5" NST male outlet adapter, .75" bronze bleeder valve (inboard pump panel) with exterior control, 2.5" i.d. stainless pipe or flanged casting between the valve and pump discharge manifold, and a 2.5" Akron 8000 series ball style 1/4-turn self-locking bronze bodied discharge valve with R-1 valve handle (located inside pump enclosure) configured for manual push-pull control located at the pump operator's control panel.

SELF-BLEEDING DISCHARGE OUTLET CAPS, AND ELBOWS

Where specified, the rocker lug discharge caps and outlet elbow extensions are to be VLH, Class-1, Trident, or equivalent which incorporates a cross-machined thread design to automatically relieve stored pressure in the line during uncapping/unthreading.

DELUGE DISCHARGE

DELUGE DISCHARGE LOCATION

The specified Deluge Discharge outlet shall be located immediately to rear of specified crew cab fire pump module, at front and center of apparatus body.

TOP DELUGE DISCHARGE - ELECTRIC OPERATED VALVE

One (1), top (above pump) gated deluge discharge to be furnished with: 3" outlet 4-bolt flange, 3" i.d. stainless steel stationary riser pipe, .75" bronze "auto-drain" valve located immediately downstream of gate valve, 3.5" Waterous "ELECTRIC ACTUATOR OPERATED" 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), operator's panel mounted valve control console with spring loaded open/close toggle switch and "OPEN/MULTIPLE-TRANSITION/CLOSED" indicator light.

FIRE PUMP MODULE, MIDSHIP OF APPARATUS, INTEGRAL WITH CREW CAB

REMOVABLE POLY SPEED LAY HOSE BEDS

Two (2), horizontal/side-by-side modular and removable speed-lay hose beds shall be provided, fabricated of .5" thick Poly.

Hose beds shall be accessible for loading via removable "speed lay hose beds" which are designed to accommodate 200 ft. each of 1.75" double jacket fire hose.

4-way mirror finish stainless steel cartridge cavity surrounds shall be provided, driver and passenger side, to protect side panels during hose deployment and installation of cartridge hose beds.

The specified speed lay swivel style discharge outlet shall be located "overhead" the hose bed floor, allowing hose coupling to the outlet after installing the loaded cartridge.

Swivel outlet shall also allow for deployment of the pre connected hose, to left and right sides of the vehicle.

SPARE TRAYS

One (1) spare poly tray shall be provided for each specified speedlays, total of 2 Spare Trays.

FORWARD SPEEDLAY 2" DISCHARGE

One (1), forward horizontal speed-lay 2" gated discharge to be provided with: 1.5" NST male outlet x 2" inlet 90 degree bronze or stainless steel discharge swivel, hose line bleeder valve, 2" i.d. stainless steel pipe or wire reinforced hose with 2" stainless end fittings, 2" Akron 8000 series ball style 1/4-turn full flow bronze bodied self-locking discharge valve (located inside pump compartment), and push-pull chrome locking discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

BACK SPEEDLAY 2" DISCHARGE

One (1), back horizontal speed-lay 2" gated discharge to be provided with: 1.5" NST male outlet x 2" inlet 90 degree bronze or stainless steel discharge swivel, hose line bleeder valve, 2" i.d. stainless steel pipe or wire reinforced hose with 2" stainless end fittings, 2" Akron 8000 series ball style 1/4-turn full flow bronze bodied self-locking discharge valve (located inside pump compartment), and push-pull chrome "twist-to-lock" discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

SPEEDLAY HOSE RESTRAINT, HINGED ALUMINUM DOORS

The open ends of the specified speedlay hose bed cavities are to be equipped with polished 4-way aluminum treadplate bottom hinged "Drop-Down" access doors. Doors are to be to be "flush" with surrounding scuff plating, equipped with polished stainless steel piano hinge and one (1) chrome plated D-ring finger latch. When open, doors are to provide for an unobstructed opening, allowing for deployment of hose and removal of hose tray cartridges.

FOAM SYSTEM, DIRECT DISCHARGE

SINGLE AGENT FOAM SYSTEM

The following specified Direct Discharge Foam System shall be of the "single agent" type, with features and accessories as per the following:

CLASS - "A" FOAM CAPABLE OUTLETS, 1100-GPM FOAM MANIFOLD CAPACITY

The following individual discharge outlets are to be Class A foam capable:

____ each, Passenger Side Discharge

____ each, Rear Discharge

____ each, Rear Pre-Connect Discharge

____ each, Driver Side Discharge

____ each, Pre-Connect Discharge(s): Speed-Lays / Cross-Lays

____ each, Hose Reel Discharge

____ each, Bumper Discharge

PLACARDS, SINGLE AGENT FOAM SYSTEM

A foam system piping schematic placard, for "single agent" system, shall be furnished, located adjacent to the system's control console. A foam system rating placard shall also be furnished, for the particular model and brand, also located adjacent to the control console. Placards shall be provided by foam system manufacturer, chrome plated cast metal.

All foam capable discharge controls shall be identified, with colored engraved nameplates to read: **FOAM**

FOAMPRO 2001 SINGLE AGENT FOAM SYSTEM:

The apparatus shall be equipped with a "single agent" FoamPro 2001, electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. The system shall be equipped with a digital electronic control display, suitable for installation on the pump panel.

Incorporated within the control display shall be a micro-processor that receives the input from the flowmeter, while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

A paddle wheel type flowmeter shall be installed in the discharge line to the specified "foam capable" discharges.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

1. Provide push-button control for foam proportioning rates from 0.1% to 9.9% in 0.1% increments.
2. Show current gallon per minute water flow rate.
3. Show total gallons of water discharged, during and after foam operations are completed.
4. Show total gallons of foam concentrate consumed.
5. Simulate flow rates for manual operation.
6. Perform set-up and diagnostic functions for the computer control microprocessor.

7. Flash a "low concentrate" warning when the foam concentrate tank(s) run low.

8. Flash a "no concentrate" warning and shut the foam concentrate off, preventing damage to the pump, should the foam tank go empty.

9. Foam Strainer, in suction line, removable

A 12-volt electric motor driven positive displacement foam concentrate pump, rated up to 2.6 GPM, with operating pressures up to 250 psi (maximum psi of 400) shall be installed in a suitable location near the apparatus pump hose.

A pump motor electric driver (mounted to the base of the pump) shall receive signals from the computer control display, and power the .5 horsepower electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the fire stream.

The motor driven foam pump system shall be mounted to a fabricated stainless steel platform, strategically located within the fire pump module, such that the pump is below the level of the foam cell.

MASTER FOAM MANIFOLD

A flanged bolt-on or victaulic grooved stainless steel pump discharge foam manifold is to be furnished, for use with the specified direct discharge injection foam system. Discharge manifold is to include a 4" i.d. stainless steel dual plate spring loaded check valve, fitting tap for foam injection line, fitting tap for flow sensor, bottom fitting tap for the remote manifold drain valve, and multiple taps for use with discharge valves designated as foam lines. Discharge foam manifold is to be of adequate size/capacity to handle flows not exceeding 1100 gallons per minute.

NOTE: Purchaser must designate which of the above specified Discharge Outlet Connections are to be Foam Capable, not to exceed 1100 gallons per minute total flow. NFPA Discharge Flow Rates are designated in Table 16.7.1.

FOAM MANIFOLD DRAIN

A .75" quarter-turn bronze drain valve, with chrome plated control handle and recessed name tag, is to be furnished, located on a side pump panel immediately above the running board/rubrail level. Manifold drain line is to extend from a bottom tap on the foam manifold, with positive "gravity-drain" to the panel mount drain valve, assuring complete drainage of the manifold downstream of its check valve and upstream of the foam capable discharge valves.

FOAM RESERVOIR, CLASS-A FOAM CONCENTRATE

Class-A foam cell to be furnished, located interior of specified non-metallic water tank, totally separate from baffled water cavities. Refer to Water Tank for full description and capacity of the Class-A foam cell.

ON-BOARD 12-VOLT "POWERED" FOAMPRO REFILL SYSTEM

To increase safety of firefighter personnel, the apparatus shall be equipped with an electronic, automatic, concentrate refill system. System shall operate independently of the foam proportioner allowing simultaneous use. Refill operation shall not require apparatus or fire pump to be running. The system shall be capable of handling Class A foam concentrates, emulsifiers, gels and decontamination concentrates. The apparatus shall be plumbed from the externally accessed intake/flush ports to the concentrate cell, located internal of the specified water tank. External fill and flush connections to be quick-connect, cam-lock type. Internal piping to incorporate check valves to prevent backflow. Concentrate tank inlet shall be positioned to minimize agitation. The refill operation shall be based on direct measurement of concentrate level in tank. System must be capable of automatically stopping when cell is full and include a manual override feature. The system shall be equipped with an electronic control suitable for installation on the pump panel. Incorporated within the control shall be a microprocessor that receives input from the system while controlling foam concentrate pump output. An all bronze three-way valve shall be included to allow the operator to flush system after use. Valve control, intake and flush ports shall be located within corresponding panel plate.

The system shall enable the operator to perform the following control/operation functions and status indicators for the refill operation:

a) Provide push-button start/stop control of foam refill
b) Solid green light advises operator concentrate cell is full
c) Flashing green indicates system is running
d) Green light off, system off
e) Allow override of “full tank” condition
f) Provide a means to flush the pump and intake piping

System shall include a 12-volt electric motor driven, positive displacement concentrate pump. Pump shall deliver minimum flow of 10 gpm (37.8 L/min) @ 20 psi, with all types and brands of concentrates currently utilized in fire apparatus. Pump body to be of all bronze construction and other wetted components and piping to be constructed of non-corrosive materials. The system will draw a maximum of 38 amps @ 12 VDC. A pump/motor solenoid (mounted to the base of the pump) shall receive signals from the computer control display and power the .5 hp (0.4 Kw) electric motor directly coupled to the concentrate pump. The system shall receive readings when the concentrate tank is full and stop operation to prevent overfill.
Components of the complete refill system shall include:

g) Operator control and display with Weather-Pac connectors
h) Refill/flush quick-connect cam-lock fittings and cap
i) Check valves
j) Pump/motor assembly and solenoid
k) Strainer
l) Tank level switch

m) Three-way fill/flush valve
n) Stainless steel pick-up wand and 6 feet of reinforced suction hose, 1 in diameter to allow maximum flow
o) Panel placards

An installation and operation manual shall be provided, along with a one-year limited warranty by the manufacturer.

PUMP COMPARTMENT INTEGRAL WITH CREW CAB

The pump compartment/enclosure shall be located "mid-ship" of the vehicle, integral with rear section of the crew cab, fully enclosed on front, rear, both sides, and top (inside crew cab). Driver's side and passenger's side exterior pump panels to be recessed from crew cab sides to allow for discharge outlet and suction inlet extensions, adapters, and closures to remain within 102" overall width of vehicle.

Access to the interior pump compartment is to be provided through specified interior crew cab pump access door.

Pump panel running boards are to be provided; drivers and passenger's sides, at a level to be "in-line" with the apparatus body rub rails.

BLEEDER VALVE AND DRAIN VALVE CONTROL PANELS

The passenger side and driver side gated discharge outlets and suction inlets bleeder valves shall be back side mounted to a brushed stainless steel horizontal full width bolt-on riser panel, located immediately above the pump panel running boards. Bleeder and drain valve controls shall be located evenly spaced, in a single horizontal row, on the exterior side of the riser panels.

The top portion of the driver and passenger side exterior pump panels, below the crew cab side window units, shall be fabricated of brushed stainless steel, bolted in position and easily removable. This header panel is to be of the minimum height necessary to accommodate overhead pump panel light fixtures.

REMOVABLE SIDE PUMP ACCESS PANELS

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Driver and Passenger sides of pump module shall incorporate brushed stainless steel removable panels, removal of which allows for total pump access, above and below the chassis frame levels, and full width of the pump module.

The removable side panels shall be located above and interlock with the driver and passenger side bleeder and drain valve control panels. Each removable side panel shall be held in place by four (4) outboard corner mounted chrome plated quick release push-button trigger latches, and shall be equipped with two (2) chrome plated grab handles to aid in the removal and re-installation of the panel. Removable side panels shall mate "flush" with the horizontal bleeder/drain riser panel and overhead header panel, and overlay onto brushed stainless steel side flanges thus eliminating the possibility of dissimilar metals corrosion.

Removal of the passenger and driver side trigger-latched panels shall provide an unobstructed opening of at least 36" wide by 34" tall, allowing access to and removal of all side discharge and suction gate valves and fittings.

Specified suction and discharge closures and elbow adapters shall allow for disassembly for complete removal of overlay inserts.

All discharge outlet and suction inlet holes are to be concentric/custom-fit around extension fittings. Trims rings shall not be acceptable

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PUMP MOUNTING, FULL-BODY MID-SHIP PUMP WITH SPLIT-SHAFT

The specified full body mid-ship pump system, with its integral split-shaft pump transmission, shall be independently mounted on a "pump house" sub-frame which itself is to be bolted to and easily removable from the chassis frame rails. The sub-frame shall consist of a two (2) each .312" steel plate fabricated Z-irons which rest on the top flange of the chassis frame rails; and are sandwich bolted to the outboard chassis frame webs. This design shall provide for a "rigid" mount of the pump house, and perfect horizontal and vertical alignment with the apparatus body, running boards always remaining in alignment with apparatus body rub rails. The pump house is to be located no more than one (1) inch forward of apparatus body, and two (2) inches rearward of the chassis cab.

The fire pump shall be mounted to the pump house sub-frame with angular brackets that are solid mounted one side of pump, castering opposite side (as recommended by pump manufacturer), so as to prevent imposing of torque/twisting loads on the full body pump castings. Pump mount brackets are to be placed at the same relative angle as engine/transmission and the rear axle.

Pump mounting brackets and pump house sub-frame shall be primer painted and urethane painted to match pump or chassis frame rails.

DRIVELINE, SPICER 1710/1760 SERIES

Spicer 1710 series driveline components to be furnished to facilitate pump installation, components shall include: slip stub shafts, slip yokes, and cross and bearings to be compatible with pump end yokes and chassis driveline. Modified drivelines shall be high speed balanced.

2/3-WIDTH INTERIOR PUMP CONTROL PANEL

A top-mount pump control console will be furnished, located above midship mounted fire pump, approximately 56" side-to-side width, designed to accommodate the optionally specified adjacent EMS Cabinet or Crew Seating.

Pump control console lower plane, 56" wide by 17" deep, is to slope down towards operator's standing position, and shall have a brushed stainless non-painted surface. The specified pump gauge panel to be located above and to the rear of pump control console.

The upper back plane of the pump control panel, 56" wide by 17" high, is to accommodate the specified "opening" brushed stainless steel instrument panel, and lower forward plane shall be stationary so as to facilitate installation of the specified inlet/outlet/drain valve and pump manual controls.

Sides of pump control console to be overlaid with polished 4-way aluminum treadplate, for scuff resistant surface.

HORIZONTAL HANDRAIL

A knurled hand rail with chrome plated end brackets shall be furnished, mounted horizontally below leading edge of pump control console.

PUMP ACCESS DOOR

One (1), tilt-out/removable double panel interior pump compartment access door shall be furnished, recessed into and "flush" with the vertical front surface of the pump compartment.

Removable door shall be at least 40" wide x 32" high, fabricated of .125" polished 4-way aluminum treadplate, U-formed double panel construction with: large polished stainless steel D-ring door handle, rotary-slam latch assembly, bottom door locator pins, and 4-way aluminum treadplate removable interior liner.

SOUND ISOLATION

Interior of double panel door shall be insulated for sound proofing against noise from pump and driveline operation. .

PUMP CONTROLS AND IDENTIFICATION

All specified pump discharge and suction controls are to be mounted on the top-mount pump control console, so as to permit operation of the pump from one central location.

All of the specified discharge valve manual and power operated valve control consoles shall be evenly spaced on the same horizontal line, immediately below and in-line with their respective discharge pressure gauge/instrument.

Any optionally specified, remote toggle switch activated gated pump suction controls, with "open" indicator lights, shall be prominently grouped together on the pump control console, for ease of identification.

All discharge valve and suction valve mechanical control rod linkages, extending from the control handle to the valve lever, are to be heavily cadmium plated **solid** cold rolled steel, equipped with adjustable threaded/jam-nut clevis or swivel ball joints on each end. Control linkages shall not require lubrication, and are to be warranted for a period of 25-years.

NOTE: Flexible control cables, wires, and other less positive methods of valve movement are not acceptable. The specified discharge and suction manifolds shall be designed to allow "line-of-sight" pathways from valve control to the valve levers, negating the need for bendable floppy devices requiring lubrication and exclusive source replacement.

All controls and inlets, drain valve controls, bleeder valve controls, and all other pump related accessory controls shall be properly identified with nameplates describing function and operation of each control.

SEALED ENVIROMENT CONTROL CONSOLE

Design and construction of the pump control panel and gauge panel shall prevent exposure to the interior pump compartment, thereby preventing air, noise, and moisture contamination into the fully enclosed crew cab/operator's control area.

NOTE: Discharge and/or suction controls which require slotted openings (gasketed or not) in the control panel for travel of the valve control handle, are not acceptable.

TOP-MOUNT MANUAL PUSH-PULL & ELECTRIC DISCHARGE VALVE CONTROLS

A stainless steel top-mount pump control console is to be provided, located above the pump module, in the forward most position. The control console is to transverse of the module, approximately 14" front-to-rear, sloped down towards operator's standing position.

The upper back portion of the pump control panel is to accommodate the specified "opening" instrument/gauge panel which is to extend above and sloping to the rear of pump control console.

The control console and gauge/instrument panel are to form two "planes" each directed at the standing operator's position. Control panel is to be machined, so that the electric control consoles an manual valve controls are evenly spaced on a single horizontal line, immediately below and in-line with the respective discharge pressure gauge or instrument, NOTE: Discharge and/or suction controls which require slotted openings in the control panel for travel of the valve control handle are not be acceptable.

All pump discharge controls are to be mounted on the top-mount pump control console, so as to permit operation of the pump discharge outlets from one central location. All manual controls are to be provided with mechanical pump actuator rods, constructed of heavily cadmium plated solid cold roll steel or stainless steel rods, equipped on each end, with adjustable threaded clevis joints or swivel ball joints. All manual push-pull discharge controls are to be chrome plated, straight in line push/pull, with the following specified hand grips.

Electric valve controls are to be located on the lower sloping control console, in-line with their respective discharge pressure gauge or instrument, spaced to not interfere with sliding mechanical controls.

IDENTIFICATION TAGS

All discharge controls and pressure gauges/instruments are to be properly identified with permanent engraved or cast nameplates describing function and operation of each control. Nameplates for discharge controls are to be color coded and texts are to indicate: numerical sequence, location of outlet, type of discharge, and size of hose to be accommodated.

DISCHARGE "PISTOL-GRIP" CONTROL HANDLES

Seven (7) IC brand top mount Pistol-Grip style control handles, model IC-340607 are to be provided.

Controls are to operate by grip-activated Trigger spring loaded position locks.

DISCHARGE CONTROL NAME PLATES

The specified individual discharge control color coded identification name plate's nomenclature is to, describe: the physical location of outlet, the size of hose to be attached, and the type of discharge. Where an outlet is Foam Capable, the name plate is to be noted so.

DISCHARGE OUTLET NAME PLATES

Individual Discharge Outlet name plates are to be provided adjacent to the outlet or hose bed. Outlet name plates are to be of the same color as the discharge valve control name plate, pressure instrument/gauge name plate, and the bleeder valve control name plate.

MANUAL PUSH-PULL DISCHARGE VALVE CONTROL LEVERS ARE TO BE USED FOR:

1 each, Tank-to-Pump Suction

1 each, Tank Fill Discharge

2 each, Rear Discharges

1 each, Driver Side Discharges

2 each, Pre-Connect Discharges: Speed-Lays

TOP MOUNT ELECTRIC VALVE CONTROL CONSOLE(S)

Two (2) Waterous Electric Valve Control Console(s) are to be located on the top-mount pump operator's panel.

DISCHARGE CONTROL NAME PLATES

The specified individual discharge control engraved color coded identification name plate's nomenclature shall, describe: the physical location of outlet, the size of hose to be attached, and the type of discharge. Where an outlet is Foam Capable, the name plate shall so describe.

DISCHARGE OUTLET NAME PLATES

Individual Discharge Outlet name plates are to be provided adjacent to the outlet or hose bed. Outlet name plates are to be of the same color as the discharge valve control name plate, pressure instrument/gauge name plate, and the bleeder valve control name plate.

ELECTRIC DISCHARGE VALVE CONTROLLERS ARE TO BE USED FOR:

1 each, Passenger Side LDH Discharge

1 each, Deluge Discharge

TOP MOUNT ELECTRIC VALVE CONTROL CONSOLES

Three (3) Akron brand 9000 series CAN Networked Valve controller(s) to be located on the top-mount pump operator's panel.

SUCTION CONTROL NAME PLATES

The specified individual suction control color coded identification name plate's nomenclature are to, describe: Opened and Closed positions (and where control is for a Tank-to-Pump suction line, the flow capacity).

SUCTION VALVE CANBUSS CONTROLS ARE TO BE USED FOR:

1 each, Passenger Side Gated Master Suction

1 each, Rear Gated Suction

1 each, Driver Side Gated Master Suction

DRIVER AND PASSENGER SIDE PUMP PANEL 12-VOLT LED LIGHTING

Weatherproof 12-volt LED light fixtures are to be furnished, located overhead the driver's side and passenger's side pump suction inlets, discharge outlets, and pump system controls. Lighting is to include, but not be limited to: four (4) each, Tecniq 12-volt LED "shielded" pump panel light fixtures, located one (1) in each of the top outboard corners of side pump panels. Lighting is to be positioned to illuminate the inlets, outlets, and their respective bleeders and drains.

The pump panel lights are to be activated with application of the parking brake.

PERIMETER LIGHTS, UNDERSIDE RUNNINGBOARD, AT WALKWAY ENTRANCES

Two (2), LED grommet mount 4" round 12-volt ground lights to be furnished, located one (1) driver's side and one (1) passenger's side, beneath the running board at the walkway entrances. Lenses to be 4" diameter, Clear. Lights to be completely sealed for weather resistance. Lights to be activated by setting of the parking brake.

PUMP SYSTEM ELECTRICAL

All pump compartment wiring for specified 12-volt electrical equipment is to be suitably protected inside heat resistant vinyl, forming one or more wiring harness(es).

All 12-volt switches, relays, terminals, connectors, and wiring to have a direct current rating of 125% of maximum current for which the current is protected. All wiring terminals to be closed barrel style, mechanically crimped, and insulated

PUMP MODE TRANSMISSION LOCK-UP

Vehicle electronic automatic transmission to be "signaled" by shifting of the fire pump into pump gear, so as to activate transmission "Lock-Up" mode (direct drive). An automatic transmission shift selector position detent or transparent removable shield is to be provided to prevent unintentional movement of the shift selector during pumping operations.

PUMP MODULE WIRING SCHEMATICS

Vehicle Specific wiring information is to be provided for this particular apparatus "as configured" upon completed delivery of the same. Information is to be in a drawing format, describing origination and termination connections and functions.

DEACTIVATE ENGINE COMPRESSION BRAKE - WITH PUMP SHIFT

Specified engine compression brake shall be automatically deactivated with the shifting of the pump transmission into "Pump Gear".

PUMP COMPARTMENT LIGHT, LED

One (1), clear lens 4" round grommet mount 12-volt LED interior pump compartment light to be furnished, mounted beneath the ceiling of interior pump module. Light to be activated by Parking Brake.

PUMP GAUGE PANEL

BRUSHED STAINLESS "TILTING" INSTRUMENT PANEL WITH LIGHT HOOD

The specified pump pressure gauges, discharge pressure gauges, and engine monitors/ instruments shall be installed on a brushed stainless steel hinged gauge panel, located above and to rear of pump control panel. The gauge panel is to be equipped with two adjustable-grip chrome plated lift-and-turn latches, located in upper corners. Gauge panel to be of the "tilting" style, to allow access to back of gauges and interior fire pump compartment. Overhead full width integral light housing to be furnished.

GAUGE AND INSTRUMENT LIGHTING

In addition to the interior cab overhead lighting, any non-back lit gauges or instruments shall be provided with overhead 12-volt lighting, to fully illuminate for nighttime operations. Lighting shall be manually switched.

PUMP OPERATOR'S INSTRUMENTS AND GAUGES

ENGINE INSTRUMENTATION

The engine instrumentation is to be included in the specified fire pump pressure control system "engine governor". Instrumentation shall be integral with the Governor Control.

AIR HORN SWITCH - PUMP GAUGE PANEL, RED MOMENTARY ROCKER STYLE

A weatherproof momentary rocker style RED switch is to be furnished on the pump gauge panel, with a nametag to read: "AIR HORN." Switch is to activate the optionally specified high capacity 12-volt air horn solenoid.

HEATER, PUMP COMPARTMENT

HOT WATER TYPE HEATER, 16,000 BTU

A 16,000 BTU Badger R-254-0 or equivalent hot water type automotive heater to be furnished and installed inside pump compartment. Heater installation to include: gated engine coolant feed and return lines, 12-volt electric fan, and fan control located on pump control panel.

PUMP HEATER HOSES AND CLAMPS

The hot water heater core feed and return lines shall be minimum .75" i. d. rubber construction.

Hose clamps are to be screw-to-tighten style, constructed of non-corrosive material.

COLOR CODED DISCHARGE NAMEPLATES: NOMENCLATURE

Discharge name plates and/or control diagrams are to be permanently engraved into colored media or encapsulated color coded printing, as specified below, Name plate colors are to match the designated color of the individual outlets and pressure instruments.

Suction name plates are to be of the same single color, contrasting to the discharge colors

The name plate's nomenclature is to identify: physical location, size of hose to be attached, and type of discharge. Example: REAR PASSENGER SIDE 2.5" PRECONNNECT DISCHARGE

Color matching name plates are to be provided for: Discharge Outlet (or Hose bed Pre-Connect), Discharge Control, Discharge Pressure Instrument, and the Discharge Bleeder Control.

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Apparatus locations are to be identified as: FRONT (forward facing), PASSENGER SIDE (curb side facing), REAR (rearward facing), and DRIVER SIDE (street side facing).

On sides of apparatus, left-to-right locations are to be identified as FORWARD and REARWARD.

At rear of apparatus, locations are to be identified as INBOARD, OUTBOARD, OR CENTER.

NOTE: The terms LEFT and RIGHT are not to be utilized, unless specifically instructed to do so by customer.

COLOR CODED DISCHARGE AND SUCTION NAME PLATES

The name plates, as provided for identification of the following devices, are to be permanently printed on a colored background with nomenclature as specified above, attached with permanent adhesive, NOTE: Name plates are not to be screwed or riveted in position.

Color matching name plates are to be provided for: Suction Inlet, Suction Control (when gated), Suction Bleeder, Discharge Outlet, Discharge Control, Discharge Pressure Instrument, and Discharge Bleeder Control.

FOAM CAPABLE DISCHARGES: IDENTIFICATION

All of the specified "Foam Capable" discharges shall have red graphical identification tags or their nametags and/or data plates marked: **FOAM**, in addition to the other discharge nomenclature.

MASTER GAUGES, VACUUM and PRESSURE

NO-SHOK LIQUID FILLED GAUGES

Master pump intake and pump discharge pressure indicating devices shall be located within 8" of each other, edge to edge, with the intake (suction) pressure indicating device to the left of the pump discharge pressure indicating device.

A 4" diameter NoShok compound style pressure gauge to be furnished, registering 0 x 600 psi, **"enhanced"** black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauge to be piped to discharge volute of fire pump, equipped with a black permanently engraved identification nameplate installed below the gauge, to read: "DISCHARGE."

A 4" diameter NoShok compound style pressure gauge to be furnished, registering -30 x 400 psi,**"enhanced"** black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauge to be piped to suction volute of fire pump, equipped with a black permanently engraved identification nameplate installed below the gauge, to read: "SUCTION."

TEST GAUGE PANEL

A test plug assembly to be furnished, installed on specified gauge panel adjacent to respective pump suction and pump discharge gauge. Test plugs to be piped to pump suction cavity and discharge cavity using high pressure clear nylon tubing with brass fittings.

INDIVIDUAL DISCHARGE GAUGES, 2.5" DIAMETER

Seven (7), 2.5" diameter NoShok compound style discharge pressure gauges to be furnished, registering 0 x 400 psi, **"enhanced"** black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauges to be located in a uniform manner no more than 6" from its respective discharge valve control.

Each gauge and respective discharge valve control to be equipped with color coded permanently engraved identification nameplate to describe numerical sequence, location, type and size of outlet.

All above specified pressure gauges to be analog style, liquid filled, vibration dampened, and capable of operations to -40 degrees F. Master gauges and individual discharge pressure gauges shall have a 7 year warranty.

The specified engine monitors, pump suction and discharge gauges, and individual gated discharge pressure gauges shall be installed on the specified gauge panel.

Pressure gauges to be piped to the individual discharge valves and pump suction and discharge volutes using high pressure clear nylon tubing with brass fittings.

THE INDIVIDUAL DISCHARGE PRESSURE GAUGES ARE TO BE ASSIGNED TO:

1 each, Passenger Side Discharge

2 each, Rear Discharges

1 each, Driver Side Discharge

1 each, Deluge Discharge

2 each, Pre-Connect Discharges: Speed-Lays

CAST METAL PRESSURE GAUGE SURROUND BEZELS

The specified individual pump discharge, pump intake, and individual discharge pressure gauges shall be encased/surrounded by chrome or polished trim bezels. Color coded placards/name tags are to be recessed into the gauge trim bezels.

TANK LEVEL INDICATOR(S)

WATER LEVEL - TANK VISION

One (1), FRC, "Tankvision" WLA300-A00 water tank level indicator to be furnished with: weatherproof encapsulated high intensity LED light indicator, tank level sending unit, and protected wiring loom. Water tank level indicator to be mounted on pump control panel. Tank level sensing unit to be located front of specified water tank to properly sense water capacity.

FOAM LEVEL GAUGE/INDICATOR

FOAM LEVEL -TANKVISION, FOR CLASS-A FOAM

One (1), FRC, "Tankvision" foam tank level indicator to be furnished with: weatherproof encapsulated high intensity LED light indicator, 30-ft sensor cable extension for foam tank level indicator, tank level sensing probe, and protected wiring loom. Foam tank level indicator to be mounted on pump control panel. Tank level sensing probe to be located in front of specified foam tank.

UPF POLY TANK DATA PLACARD

The Apparatus is to be provided with a Data Placard, as furnished by the Water Tank Manufacturer. The Data Placard is to include the following fields of information:

MAXIMUM FILL PRESSURE: PSI
MAXIMUM FILL RATE: GPM
DATE OF MANUFACTURE
TANK SERIAL NUMBER
WATER CAPACITY: Gallons
FOAM CAPACITY: Gallons-A
FOAM CAPACITY: Gallons-B

WATER TANK "MAXIMUM PRESSURE" DATA LABEL

The one (1) optionally specified Water Tank Re-Fill Inlet(s) to be furnished with permanently printed or engraved Data Plate(s) to indicate the **MAXIMUM ALLOWED TANK FILL INLET PRESSURE**. Inlet pressure is to be determined by the piping/valve size (inside diameter) and Tank Manufacturer's Restrictions. Label(s) to be permanently encased in a chrome full surround bezel, located adjacent to the inlet fitting(s).

POLY WATER TANK -- LIFETIME WARRANTED - 1000 WATER/20 FOAM

The apparatus shall be equipped with a 1000 gallon water capacity polypropylene thermoplastic water tank, with isolated foam reservoir. Total of tanks capacities, for foam concentrate and water shall be 1020 gallons.

The tank body and end bulkheads shall be constructed of .5" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to NFPA standards.

The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments.

The .5" thick cover shall be recessed .375" from the top of the side walls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the booster tank.

The bottom of the tank shall be secured within the specified rubber lined "full perimeter cradle" as described below, design to be in accordance with the tank manufacturer's requirements.

The water fill tower shall be designed, sized and located as required by the needs of the tank. The .5" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen.

An overflow tube shall be installed within the fill tower and internally piped with large diameter schedule 40 PVC pipe through the tank, exiting behind the vehicle's rear axle.

The water tank sump shall be a minimum of 10" x 10" x 3" deep and located on the bottom of the booster tank booster tank. There shall be a 4" i.d. schedule 40 polypropylene tank suction pipe from the entrance of the tank (adjacent to and inline with fire pump) to the tank sump. The tank drain and clean out shall be 3" NPT schedule 80 female flange with plug, located in the bottom of the tank sump.

FOAM RESERVOIR

One (1), 20-gallon foam reservoir/cell shall be furnished as a component of specified water tank. The foam cavity shall include a fill stack with lift-up cover and latch assembly. The foam fill tower shall be surrounded by a metal fabrication, providing separation from the hose bed. The foam lid shall have a 4" diameter screw-on vent cap. Two (2) 1" TIPT female spuds shall be furnished in the exposed end wall of the foam reservoir/cell, for use with foam concentrate liquid line(s) of the specified foam system.

WARRANTY

The booster tank shall have a lifetime warranty as provided by the tank manufacturer.

UPF POLY TANK III

The specified water tank shall be manufactured by **United Plastics Fabrication (UPF), NO EXCEPTIONS**.

The booster tank warranty is to be provided by United Plastics Fabricating, Inc., copy of the warranty must be included in the delivery documents.

WATER TANK SUPPORT STRUCTURE

The specified water tank is to be nested into a full perimeter mounting "picture frame" style support structure consisting of 2" x 2" x .25" thick 304 grade stainless steel angle. The front of tank is to be equipped with a full width .25" thick front base plate. All stainless cradles are to be wire-feed welded to the specified stainless steel apparatus body sub frame transverse tubings.

Structure is to be tank-specific, and shall provide support in the areas and locations specified by the tank manufacturer.

All mating areas between tank and structure are to be lined with 60 DURO rubber cushion material, .5" thick on horizontal and front surfaces and .25" thick on sides and back vertical surfaces.

Structure is to be mounted to chassis frame rail side walls by hardened carriage bolts. The use of threaded rod plates or U-bolts will not be considered adequate.

TANK CRADLE STRUCTURE WARRANTY

The tank cradle is to have a **lifetime warranty**, both structurally and corrosion-free, as provided by body builder.

RECTANGULAR SHAPE TANK

The specified water tank is to be of a conventional rectangular shape, located beneath the main hose bed, rearward of the front body transverse cross-panel.

The tank bottom is to be T-shape, to allow for rear wheel clearance and maximum lower side compartment depth.

FOAM TANK DESIGN STANDARDS

The non-corrosive foam tank is to meet (or in the case of multiple tanks, Tanks are to meet) applicable sections of NFPA standards.

The foam concentrate tank is to be provided with sufficient wash partitions so that the maximum dimension perpendicular to the plane of any partition shall not exceed 36 inches. The swash partition(s) are to extend from wall to wall and cover at least 75 percent of the area of the plane of the partition.

The foam concentrate tank is to be provided with a fill tower or expansion compartment having a minimum area of 12 square inches and having a volume of not less than 2 percent of the total tank volume. The fill tower opening is to be protected by a completely sealed air-tight cover. The cover is to be attached to the fill tower by mechanical means. The fill opening is to be designed to incorporate a .25 inch removable screen and shall be located so that foam concentrate from a five (5) gallon container can be dumped directly to the bottom of the tank to minimize aeration without the use of funnels or other special devices.

The foam tank fill tower is to be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank. The pressure/vacuum vent must not allow atmospheric air to enter the foam tank except during operation or to compensate for thermal fluctuations. The vent is to be protected to prevent foam concentrate from escaping or directly contacting the vent at any time. The vent is to be of sufficient size to prevent tank damage during filling or foam withdrawal.

A color coded label or visible permanent marking that reads "FOAM TANK FILL" is to be placed at or near any foam concentrate tank fills opening.

An additional label is to be placed at or near any foam concentrate tank fill opening that specifies the type of foam concentrate the system is designed to use. Any restrictions on the types of foam concentrate that can be used with the system are also be stated, and a warning message that reads "WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM."

The foam concentrate tank outlet connection is to be designed and located to prevent aeration of the foam concentrate and shall allow withdrawal of 80 percent of the foam concentrate tank storage capacity under all operating conditions with the vehicle level.

TANK NOTCHED FOR RECESSED TANK-TO-FIRE PUMP SUCTION PLUMBING

The front bottom of tank is to be "notched" to accommodate recessing of the tank-to-fire pump suction piping. The notched area is to accommodate the specified hump hose coupling, and allow for a forward most location of the water tank within the apparatus body cavity.

TANK NOTCHED FOR ISOLATED FOAM CELL

The outboard corner of the water tank, shall be "notched" to accommodate an isolated independent foam reservoir/tank, of the above specified capacity. The notch shall be sized, such that the foam reservoir/tank fits "tightly" down into the tank top corner, flush with top lid and end wall of water tank, so as to not conflict with the specified hose bed area. The foam tank shall be held in position with top and end retainers, yet easily removable.

This method of accommodating the foam reservoir/tank, shall "positively" prevent any contamination of the tank's water or the foam tank's concentrate, should one or the other leak its contents.

The above specified Lifetime Repair Warranty shall apply to both the water and foam tanks.

FOAM RESERVOIR DRAIN

One (1) foam reservoir drain is to be furnished, each consisting of a 1/4-turn ball style bronze or stainless steel .75" i.d. valve, stainless steel piping, and threaded spud in reservoir. Reservoir drain is to be located in the pump module, and is to drain liquid concentrate to below the chassis frame.

WATER TANK PASS-THROUGH(S) FOR REAR DISCHARGE PIPING

The water tank shall have two (2) 4" i.d. pass-through PVC sleeve(s) extending horizontally through the length of the water tank, to allow passage through the tank of discharge piping. Sleeve(s) shall be in line with the exit location of the rear discharge(s).

REAR DIRECT TANK FILL, 2.5" VALVE WITH 2.5" NST FEMALE INLET

LOCATION
There shall be one (1) 2.5" gated external tank fill furnished and properly labeled, installed on the rear of the apparatus.

Piping, for the fill, shall be routed through the rear wall of the tank and include an interior tank flow deflector to "break up" the stream of water entering the water tank.

VALVE
One (1) each 2.5" Akron ball valve with manual control, 2.5" stainless steel piping, and 2.5" NST swivel female inlet with plug cap and chain shall be provided.

BLEEDER VALVE
A 1/4-turn drain/bleeder valve shall be furnished, with exterior rear body panel mounted chrome plated bleeder valve control handle, and recessed permanently engraved identification label.

OVERHEAD HOSE BODY: FORWARD DUNNAGE AND REARWARD HOSE BED

The upper level centerline of hose body, above the water tank, is to include a forward dunnage area, and a rearward hose bed.

OPEN-TOP DUNNAGE AREA
Open dunnage area is to be provided.

A forward hose body transverse divider panel is to be provided, fabricated with perimeter flanges, and bolted in position (so as to be removable) immediately to the rear of the water tank fill stack. Transverse divider panel is to form the forward wall of the main hose bed area, and provide a mounting surface for optionally specified adjustable hose bed divider tracks.

Location of the transverse divider panel is to provide for an "open-top" dunnage area, ahead of the main hose bed, overhead the water tank, rearward of the midship pump module.

Dunnage floor gratings or heavy gauge 4-way aluminum treadplate, notched to custom fit around the specified tank fill stack(s).

HOSE BED: ALUMINUM GRATINGS

The apparatus main hose bed area is to be located to the rear of the transverse hose body divider panel, between passenger's and driver's inboard apparatus body sides, overhead the water tank.

Multiple double-break flange reinforced tank retainer/hose load support beams are to be provided, spanning between and bolted to the inboard apparatus body sides. Beams are to be constructed of body matching material, profile is to be of minimum height to maximize hose bed depth, and the beams are to be positioned no more than twenty (20) inches apart.

Extruded aluminum slatted hose bed floor gratings are to be furnished, running longitudinally the full length of the hose bed. Longitudinal grating slats are to be fastened to underside perpendicular cross-slats which extend the full width of the hose bed cavity. The hose bed floor gratings are to be assembled with bolts (not welded), so as to allow for future modifications and repairs to the grating assembly. Longitudinal gratings are to be single piece full length extrusions, spaced at least .5" apart to allow for hose ventilation. Cross-slats are to be positioned to rest on the top surface of the specified overhead tank retainer/ hose load support beams.

STAINLESS STEEL ADJUSTABLE HOSEBED DIVIDER TRACKS

Channel fabricated stainless steel hose bed divider horizontal slide tracks are to be furnished, transverse at the rear of hose bed, designed so as to retain the floor gratings and prevent snagging of hose or couplings during deployment and re-loading operations.

In addition to the rear transverse hose bed divider slide track, two (2) parallel transverse stainless steel horizontal channel tracks shall be furnished, bolted to/removable from the specified forward cross divider. Forward and rear horizontal channel tracks are to be provided with sliding friction clamps and threaded studs with acorn nuts, allowing infinite side-to-side adjustment of hose bed divider location.

2-HOSEBED DIVIDERS

Two (2) each, adjustable hose bed dividers shall be furnished, constructed of 1/4" unpainted aluminum.

Front and bottom of divider shall have weld on T extrusion for structural integrity and adjustment.

The top rear corner of the divider panels shall have a 3" radius, to prevent damage to tarps and restraints.

All horizontal, vertical, and rear radius metal edges are to be DA sanded smooth to prevent personnel injury and hose damage.

HAND HOLD MACHINED INTO REAR OF HOSEBED DIVIDER(S)

The above specified two (2).25" thick aluminum hose bed divider panel(s) shall have a hand-hold cut-out laser machined into the trailing edge surface. Cut-out area to have top and bottom radiuses, and shall be sanded to provide smooth edges.

HOSEBED FORWARD TRANSVERSE AIR DEFLECTOR, HINGED

A front hose bed transverse mounted “hinged” air deflector panel shall be furnished, installed so as to not interfere with the hose loading and hose deployment. Air deflector shall be fabricated of treadplate aluminum with stainless piano hinge, designed and located so as to direct air flow over the top of specified hose bed cover, during road travel.

HOSE RESTRAINT: BLACK NETTING

The main hose bed shall be equipped with a rear full width black nylon restraint, consisting of strap netting across the rear of hose bed, with quick-release draw-tight clips.

NO RIDE WARNING LABEL

One or more permanent labels to be installed at the rear step area, to read: **WARNING: Do Not Ride on Tailboard**. Label is to be permanently encased in a chrome full surround bezel.

TAILBOARD, EMBOSSED .187” ALUMINUM TREADPLATE

A 101" wide rear step/tailboard shall be furnished, constructed of .187" polished 4-way aluminum treadplate material, with an NFPA approved (as slip-resistant) “embossed” tread top surface.

Tailboard shall be a single piece fabrication, with perimeter fabricated flanges, side and rear same width as the body rub rails, and outboard rear corners "beveled" 45-degrees. The beveled corner flanges and the rear flange of tailboard shall be double-broke and have a total of five (5) diamond shape cut-outs, exposing the under flange mounted rear corner marker lights and rear center marker light cluster. Tailboard shall be spaced .5" away from the rear face of body, for drainage, bolted in position and easily replaceable in the event of damage. Underside of aluminum treadplate tailboard is to be lined with a dielectric barrier tape, separating the aluminum from the dissimilar metal underbody sub-frame structure.

Per NFPA: Steps, platforms, or secure ladders shall be provided so that firefighters have access to all working and storage areas of the apparatus. The maximum stepping height from ground to first step shall not exceed 24". Additional steps cannot be more than 18" apart. All steps, platforms, or ladders shall sustain a minimum static load of 500 pounds. without permanent deformation and shall have skid resistant surfaces. Any step shall have a minimum area of 35 sq. in. Platform shall have a minimum depth of 8".

TAILBOARD DEPTH

The tailboard shall be fourteen (14)" deep (front-to-rear flange), across the entire width of the tailboard.

ALUMINUM TREADPLATE PUMP PANEL RUNNING BOARDS

Driver's and passenger's side pump panel running boards to be furnished, extending from the rear of chassis cab (or cab steps) to the front outboard body corners, at a horizontal level "in-line" with the apparatus body side rub rails. Running boards shall be single piece fabrications with double-broke perimeter flanges, and shall protrude outboard of pump panel sides, to the same total width as the apparatus body rub rails (101"). Running board fabrications are to be bolted to the bottom sides of the fire pump module and furnished with forward and rearward angular stainless steel under-support brackets.

Running boards are to be constructed of .187" polished 4-way aluminum treadplate, with an NFPA approved non-slip foot grip tread top surface.

TOW EYES, TWO (2) EACH

Two (2) tow eyes shall be installed below the rear of body, eyes to be 3" in diameter.

The tow eyes shall be machined into .75" thick steel plate, properly attached to sides of chassis frame rails, so that the truck can be straight-line pulled from both of the eyes.

COMPARTMENTED BODY CONSTRUCTION MATERIALS and FABRICATION:

FABRICATION MATERIALS:
Forming of the individual fabrications shall be by a computer controlled press brake, with minimum radius precision tooling. The apparatus body compartments, including floors and walls, are to be fabricated of minimum .125" type 5052-H32 smooth sheet aluminum, with tensile strength of 38,000 psi and a yield strength of 31,000 psi.

Where specified, custom fitted U-formed hinged compartment door outboard panels are to be fabricated of .125" smooth sheet aluminum, and removable inner door panels are to be 3003 aluminum treadplate.

Other specified interior compartment shelving, trays, and shelving tracks shall be fabricated of smooth aluminum, of designated thickness, and shall have a machine sanded finish.

The specified 4-way treadplate apparatus body components shall be type 3003 "Brite" aluminum C-102 or equal pattern treadplate, NFPA approved no-slip diamond on step and walk surfaces.

PRECISION MACHINING AND FABRICATION

All individual apparatus body fabricated components are to be: computer designed for repeatable tolerances, precision computer control machined for superior cut edge quality, and computer control machine fabricated for assembled parts accuracy.

FASTENERS:
All apparatus body screw type fasteners shall be stainless steel "low profile" button socket head cap screws with stainless steel hex "Ny-Lok" threaded nuts designed to prevent loosening. Size of fasteners, .25" minimum, and their spacing must provide for maximum structural integrity and no leakage in flanged areas between fasteners. Any necessary exterior exposed nut fasteners shall be polished stainless steel or chrome plated "acorn" covering fastener threads. **NOTE: Hex head, truss head, Phillips pan head, or other large profile style fasteners shall not be used for assembly of fabricated sheet metal components. Additionally, there are to be NO .187" fasteners of any style used for structural applications.**

WHEELWELL BODY PANELS & OVERHEAD DOOR JAMBS FABRICATION, MATERIAL:

The specified "removable " wheelwell outboard panels (with radius wheel cut-outs), and overhead vertical door jambs are to be fabricated out of body matching material.

CONSTRUCTION METHODS:

All individual fabricated body components are to be assembled with removable fasteners for ease of modifications and repairs. Exterior compartment and hose body fabrications must be free of all projections which might injure personnel or fire hose. NOTE: Where "nibbled" or other non-continuous non-smooth cutting methods are used to machine the body material, all edges must be reworked/filed for injury prevention and improved appearance.

The described construction methods are to ensure easy disassembly of the apparatus body in the event of damage or need for future modifications. Apparatus designs or construction methods which do not allow for disassembly and removal of major fabricated components are not to be considered "equal" to this construction method, NOTE: metal bar shapes, tubular structures and/or extrusions are not to be utilized in the construction of the apparatus body; metal fabrications with integral flanges are to provide the needed structural integrity.

Specified upper level side compartments shall have fabricated vertical door jambs located above wheel well enclosure, separating forward/upper level wheel well/rear compartment areas. Door jambs are to be bolted to sweep-out threshold portion of upper level compartment opening and to the underside of overhead compartment roof fabrication, easily removable so as to allow future modifications to door opening size.

For maximum cubic footage of compartments, the lower portion of the interior forward side compartments shall be recessed into within 4-inches of the chassis frame rail depth, both driver's side and passenger's side of the apparatus body. Recessed areas to be full width of interior compartment, at least 30" high, occupying entire underbody area beneath the outboard portion of the tank.

BODY CORNER STYLE:

The front & rear driver side and passenger side body corners shall be as specified below.

The body corners shall have full height vertical front surfaces, and integral forward compartment door jambs.

SWEEP OUT COMPARTMENT FLOORS:

Driver's side, passenger's side, and rear compartments shall be equipped with "sweep/wash-out" floors, which are raised at least 1" above the compartment door opening threshold and exterior rub rail. All running board/tailboard level side compartment door thresholds shall extend outboard, below the compartment doors, with a minimum 3" flange-down (flush with body sides) and 1" return-in, providing structure for mounting of the specified rub rail material. Door thresholds shall be bolted to and removable from the interior raised compartment floors.

Upper level compartment floors, located above rear wheel well housings, are to be "sweep/wash-out" design, fabricated of body material matching smooth sheet material. Upper level compartment door bottom threshold shall be integral with the rear wheel well outer panel, positioned at least 1" below the interior compartment floor surface, and lined with mirror finish stainless steel for doorway protection.

FRONT COMPARTMENT CORNERS, SQUARE SHAPE

The driver side and passenger side front body corners are to have a 90-degree "square" shape. Each corner is to be a single piece full height fabrication, with integral inboard body mating flange (allowing for removal), and outboard vertical door jamb.

REMOVABLE INTERIOR COMPARTMENT CORNER ALUMINUM WIRE COVERS

The passenger's side and the driver's side front and rear interior compartment corners (4-each) are to include vertical full height/full depth wiring harness covers (bulkheads) which are bolted in position and easily removable. Interior compartment corner wire covers are to be constructed of machine swirled natural finish sheet aluminum, designed to provide a rigid mounting surface for optionally specified adjustable shelf tracks.

Front driver side interior corner wire cover is to be "cut-out" and equipped with a large removable panel door for unobstructed access to the specified 12-volt power distribution center. The removable panel door is to be matching smooth aluminum, and designed to allow quick removal without the need for hand tools. Where shelf tracks are provided on same wire cover, the panel door is to be located inboard of each track, so tracks may remain in place.

Where the apparatus is equipped with a Line Voltage System, the passenger side interior corner wire cover is to be cut-out, to expose the perimeter profile of the optionally specified line voltage circuit breaker panel.

CONSTRUCTION FEATURES:

Wheel well trim shall be furnished as specified below, bolted in position and easily replaceable, surrounding driver's side and passenger's side rear body "radius" wheel well cut-outs.

STAINLESS STEEL WHEEL WELL LINERS
A removable sheet stainless steel circular underside wheel well liner shall be furnished, driver and passenger side wheel well housings. Liners shall be bolted in position and easily removable to allow for underside access to the optional wheel well panel mounted accessories, such as: warning light fixtures, fuel fill piping, air bottle containers, etc: Removal of liners shall also provide convenient access to the rear axle suspension components. Where the outboard edge of circular liners meets the vertical outboard wheel well panel, a replaceable hollow-core rubber gasket shall be provided.

ALUMINUM TREADPLATE ROOF OVERLAYS, OVERHEAD ROLL-UP DOORS
Driver's and passenger's side compartment roof tops shall be lined/plated with designated material, flanged down at least 5-inches on front, rear (to top of Roll-Up Doorway), and full length outboard side. Liners shall extend the full length and the full width of compartment roof tops. Flange mating corners of roof top liners shall have "TIG" welded closures. Where aluminum treadplate liners are specified, they shall be underside coated with a spray on rubberized "barrier" coating, prior to final bolt-on installation, NOTE: The treadplate liners are not to be considered a structural portion of the apparatus body, bottom sides of which are not to be visible from within the compartment's interior.

During assembly all areas where metal mates or abuts shall be properly caulked with G.E. or equal silicone body sealant to prevent moisture penetration.

Where compartment wall/bulkhead mounted vertical slotted adjustable shelf track assemblies are specified, the tracks are to be bolted in place or mechanically "engaged" to compartment wall/bulkhead, and easily removable. NOTE: Weld-on shelving tracks do not meet the intent of this requirement.

UNDER BODY STAINLESS STEEL SUB-FRAME

An apparatus body sub frame is to be furnished, completely independent of the assembled apparatus body fabrications, bolted to and easily removable from the body module. The apparatus body sub frame, including a forward yoke assembly with torsional suspension, transverse under-tank-cradle supports, and a rigid cantilevered rear platform, are to be constructed of rectangular heavy wall type 304 stainless steel welded tubing. Overall sub frame design will provide a corrosion-free structural under body “platform” onto which the compartmented apparatus body is to be bolted to and easily removable from.

FORWARD BODY SUB-FRAME

A forward sub frame "yoke" is to be furnished, with upper level horizontal transverse cross-members supporting the water tank cradle, and lower level outboard and rearward horizontal members providing under-compartment-floor support of all side and rear compartments. Sub frame vertical tubular structures are to be no more than 1” from chassis frame webs, so as to allow for maximum interior depth of all side compartments. Four (4) bolt-through rubber cushion "vibration and torsion isolators" are to be provided, two (2) per side. Isolators are to bolt to .312” longitudinal yoke structures, and chassis frame web .312” angle brackets, the assembly of which allows for unlimited twisting-moment of the chassis frame rails, independent of the body sub frame. Lower level horizontal under-floor supports are to allow for individual compartment floor load rating in excess of 800 pounds per compartment (as determined by body construction material), without deformation of the floor material.

REARWARD BODY SUB-FRAME
A “cantilevered” rear under body and tailboard sub-frame platform will be furnished, with transverse and longitudinal tubular stainless structures welded to .75” x 8” glove plate frame drops which are bolted to the side web of rear most chassis frame rails. Glove plates are to be located immediately rearward of the chassis rear axle suspension, and are to include integral bottom 3” diameter closed tow eyes. A bolt-on tubular structure is to be provided, spanning between the glove/tow plates, with its removal allowing for the entire body sub frame (with compartmented body attached) to be lifted vertically from the chassis.

BODY SUB-FRAME MOUNTING TO CHASSIS
Apparatus body sub frame components are to be bolted to the chassis frame with hardened steel locking thread nut and bolt fasteners, bolt holes precision drilled through chassis frame side webs. Body sub frame is to be positioned parallel with and leveled to the chassis frame rails, designed to provide approximately 22" from the ground to top of apparatus body rub rails, running boards, and rear tailboard, when fully loaded.

NOTE: The apparatus body sub frame is not to be fastened to the chassis frame rails with U-bolts, sandwich clamps, or other temporary fastening methods, AND/OR the body sub frame is not to be permanently welded to the body fabrications or extrusions. Above all, the body sub frame is to provide the above specified under-compartment-floor support.

Top mating surface (body to sub frame) of underbody and tailboard tubular supports is to be fully lined with 3M vinyl barrier tape so as to properly isolate the sub frame from the compartment floors.

FILTERED COMPARTMENT VENTING

Back walls of all apparatus body side compartments, including: six (6) lower level (below top of chassis frame rails) 2-ahead of and 1-behind the wheel well housings, are to be equipped with vented pass-through openings to the body under side. Vented openings are to be covered with 3M water resistant mesh filter media and an interior compartment metal grille. Grille is to be attached to the interior compartment wall with reusable stainless steel screw fasteners with nylon threaded inserts, allowing for removal and cleaning of the filter media from inside of each vented compartment. Vent openings, mesh filter media, and removable grille must allow for dust and moisture free ventilation of the compartment interiors, without reduction of the interior compartment depth.

APPARATUS BODY SIDE COMPARTMENT CONFIGURATION:

A precision machined and fabricated fire apparatus compartmented body is to be furnished, designed to be located immediately rearward of the specified fire pump module, totally separate of the pump module. The compartmented body is to be mounted to, supported by, and removable from the specified under body structural sub-frame.

The body configuration is to include fully enclosed and weather sealed compartmentation on the driver side and the passenger's side of vehicle. In order to provide for maximum depth compartmentation, the wheelwell housings are to completely enclose the rear axle suspension components, allowing for the lower portions of the side compartments to extend inboard to the chassis frame depth. Additionally, the apparatus body overall side-to-side width (inboard of body rub rails and fender moldings) is to be 100".

Passenger's side compartments are to be provided: one (1) each full-height ahead of, one (1) each upper level above and one (1) each full-height behind rear wheelwell housing.

Driver's side compartments are to be provided: one (1) each full-height ahead of, one (1) each upper level above and one (1) each full-height behind rear wheelwell housing.

COMPARTMENTATION, THREE (3) EACH: DRIVER SIDE

D1: The driver's front side compartment segment (ahead of wheelwell) is to be 52" interior width x 69" interior height x 24" interior depth lower level/14" interior depth upper level. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door, size of 52" wide x 65" high, (clear opening size of 49" wide x 60" high).

D2: The driver's side over-the-wheels upper level compartment segment is to be 56" interior width x 37" interior height x 14" interior depth. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door, size of 56" wide x 33" high, (clear opening size of 53" wide x 28" high).

D3: The driver's rear side compartment segment is to be 48" interior width x 69" interior height x 24" interior depth lower level/14" interior depth upper level. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door, size of 48" wide x 65" high, (clear opening size of 45" wide x 60" high).

COMPARTMENTATION, THREE (3) EACH: PASSENGER SIDE

P1: The passenger's front side compartment segment (ahead of wheelwell) is to be 52" interior width x 69" interior height x 25" interior depth lower level/14" interior depth upper level. Compartment segment to be fully enclosed and weather

sealed, equipped with one (1) roll-up compartment door, size of 52" wide x 65" high, (clear opening size of 49" wide x 60" high).

P2: The passenger's side over-the-wheels upper level compartment segment is to be 56" interior width x 37" interior height x 14" interior depth. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door, size of 56" wide x 33" high, (clear opening size of 53" wide x 28" high).

P3: The passenger's rear side compartment segment is to be 48" interior width x 69" interior height x 25" interior depth lower level/14" interior depth upper level. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door, size of 48" wide x 65" high, (clear opening size of 45" wide x 60" high).

COMPARTMENT DOOR HEADER TREADPLATE OVERLAY

Specified exterior body compartment over-the-door headers are to be overlaid, with a 4-Way Aluminum Treadplate (up to 5" high) vertical flange, which is integral with the compartment roof top overlays. Bottom of flange is to break-out 45-degrees, to form a Drip Cap overhead the door opening.

COMPARTMENT DOORS AND DOOR ACCESSORIES:

The following specified roll-up style compartment door tracks/extrusions to be "flush" with exterior body panels/door jambs. NOTE: Specified roll-up compartment doors shall be manufactured in the United States of America.

Specified compartment door jambs shall be fabricated with inboard flanges which are machined for screw type fasteners for mounting of the specified roll-up compartment door aluminum side track extrusions.

All side compartment doors shall be ROM Robinson roll-up shutter style, provided with: spring loaded "front roll" door lift/roll-up mechanism, a full width anodized tubular bar style bottom slat latch, and extruded aluminum shutter slats which are Urethane painted to match the major apparatus color.

Extruded aluminum vertical side tracks and overhead molding shall be provided, with removable neoprene rubber weather-stripping. The door tracks and moldings shall be bolted to vertical side and horizontal overhead door jambs so as to be easily removable for repairs or modifications.NOTE: Roll-up door tracks and/or moldings which are riveted or welded in position are not acceptable.

Each individual roll-up extruded aluminum door shall be of maximum size for the available door opening.

The following specified door opening sizes may be reduced by no more than 3" total width (1.5" per side) and 4" total height. Decrease in compartment opening sizes is caused by profile of side track extrusions with weather-stripping and bottom door slat which remains in the door opening.

PAINTED ROLL-UP DOOR TRACKS AND BOTTOM DOOR SLATS

The above specified roll-up door extruded aluminum side tracks, and the bottom door slat of all doors, shall be painted job color, to match door bundle slats.

ENCAPSULATED ROLL-UP DOOR PROTECTION

All of the specified six (6) roll-up door "bundles" shall be encapsulated within custom fabricated swirl finish aluminum shrouds, protecting "bundled" door slats from interior compartment damage. Fabricated shrouds to be of minimum size necessary, to accommodate the largest diameter door bundle, and shall span the full width of interior compartment.

The specified door bundle encapsulators are to be removable, from within the compartment interior, so as to allow for door slat and rewind mechanism maintenance/cleaning, without having to remove exterior add-on access panels.

NOTE: Hidden door bundle cavities, which are only accessible by removal of sealed/caulked exterior apparatus body panels, are not acceptable.

ROLL-UP DOOR PULL-DOWN STRAPS (TETHERS)

The specified roll-up style doors shall be equipped with bottom door slat mounted vinyl braided "tethers" which, when the door is fully open, are no more than 80" from the ground (mid-compartment level). The tether shall be located at trailing edge of door, firmly attached to door slat and midway on compartment bulkhead, so as to stay inside the compartment, when pulling door closed.

ROM VERTICAL STRIP INTERIOR DOORWAY COMPARTMENT LIGHTING

Six (6) pairs of ROM brand 12-volt multiple LED element, interior compartment vertical "strip" tubular lights, shall be furnished for compartments.

Lights to be inboard the specified door tacks or jambs, activated by "opening" of the respective compartment door, using a magnetic bar latch switch where roll-up doors are provided (mechanical plunger switch where hinged doors are provided).

Lighting shall have polycarbonate lens to resist breakage from impact and damage from light element heat.

COMPARTMENTATION, REAR RUNNINGBOARD LEVEL

A rear apparatus body compartment shall be furnished, located at running board level, ahead of the tailboard, to the rear of the chassis frame rails and water tank, below the hose bed, and between the driver's and passenger's rear side compartments.

The rear compartment shall be fully enclosed and weather sealed, equipped with a "sweep/wash-out" floor, which is raised at least 1" above the compartment door sill and the specified tailboard/bumper. The entire compartment floor shall rest on, and be supported by, the specified rear under body tubular sub frame platform.

Rear compartment shall extend vertically from its interior floor to the underside of hose bed, and longitudinally from inner door liner to the rear of the chassis frame rails.

REAR COMPARTMENT DOOR, ROLL-UP STYLE, ROM BRAND

The following specified roll-up style ROM compartment door track extrusions are to be "flush" with exterior rear of body panels.

The rear body door panels shall be fabricated with inboard flanges at doorway sides, which are machined for screw type fasteners for bolt-on mounting of the following specified roll-up compartment door aluminum side track extrusions.

The rear compartment ROM door shall be an extruded anodized aluminum roll-up shutter style, provided with: spring loaded "front roll" door lift assist mechanism, a single full width bottom slat mounted tubular bar latch handle, and two (2) outboard doorway mounted latch handle retainers.

Extruded anodized aluminum vertical left and right side tracks and horizontal overhead molding shall be provided, each with removable neoprene rubber weather-stripping. The door tracks and molding shall be bolted to vertical side and horizontal overhead door jambs so as to be easily removable for repairs or replacement of the weather-stripping, NOTE: Roll-up door tracks and/or moldings which are riveted or welded in position are not acceptable.

The roll-up door shall be of maximum width and height for the available doorway opening size. The door opening size may be reduced by no more than 3" total width (1.5" per side track) and 4" total height (obstruction below door bundle). The decrease in compartment opening size is only allowed due to the profile of side track extrusions with attached weather-stripping and the bottom door slat which remains in the door opening.

ROM VERTICAL STRIP INTERIOR DOORWAY COMPARTMENT LIGHTING

One (1) per compartment ROM brand 12-volt multiple LED element, interior compartment vertical "strip" tubular lights, shall be furnished.

Where used with roll-up style compartment doors, the lights are to be inboard the specified roll-up door tracks, activated by "opening" of the respective compartment door, using a magnetic bar latch switch. Lighting shall have polycarbonate lens to resist breakage from impact and damage from light element heat.

REAR BODY FACE CONSTRUCTION MATERIAL, SMOOTH PLATE ALUMINUM

Exterior rear face of body, including: passenger's side rear door jamb, driver's side rear door jamb, and rear top header (below hose bed) shall be fabricated of smooth plate aluminum, to allow for application of reflective graphics.

TRIPLE-BROKE-FLANGE 'SAFETY EDGE" HOSEBED RISERS

Driver's side and passenger's side full length longitudinal hose bed risers are to be furnished, with triple-formed top horizontal flange, vertical rear triple-formed flange, and mitered top rear corner. A forward transverse hose bed riser is to be furnished, with triple-formed top flange, extending between and flush with driver's side and passenger's side hose bed risers. In addition to improved strength and appearance, the triple-formed-flanges are to provide for a "safety edge" when used as a hand-grasp during hose loading operations. Front transverse hose bed riser is to be bolted to front body cross panels, easily removable. Driver's and passenger's side hose bed risers are to be bolted to compartment roof tops, "inboard" and flush with hose bed side walls, easily removable. Transverse and longitudinal hose bed risers are to be designed so as to provide additional hose bed depth, easily removable for future adjustments to hose bed depth.

The hose bed risers are to be constructed of 5052-aluminum, fully painted to match exterior job color.

COMPARTMENT FLOOR TILES, SECTIONAL VINYL FLOOR TILE

Vinyl 12" x 12" sectional floor tiles are to be provided, custom fitted to the perimeter profile of the interior floor surfaces of the driver's side, passenger's side, and rear compartments, seven (7) total.

The specified 12" x 12" floor tiles are to be BLACK in color.

ALUMINUM PLATE PULL-OUT ALUMINUM PAN TRAY(S)

Two (2), fabricated .190" natural unpainted aluminum pull-out pan style tray(s) are to be furnished. Pan tray(s) are to be of maximum width and maximum front-to-rear dimension for specified mounting area. Tray(s) to be provided with 2.5" deep perimeter formed-up flanges, 4-corner closure welded, and bolted to specified roller mechanism. Two (2) 300 pound. total capacity cadmium plated Grant or equivalent single direction, multi-section, slide assemblies are to be provided per tray. When facing the tray, the left slide assembly is to be of the "locking" style, in both retracted and extended positions. Roller slides are to be bolted to horizontal surface using full length angular brackets, with inboard surface mating flange, allowing for minimum height profile and maximum width of the pull-out tray .

PULL-OUT TRAY LOCATION(S)

The above specified "apparatus body" pull-out tray(s) are to be located in the following compartment(s):

1 ea. D-1:

1 ea. P-3:

REFLECTIVE STRIPING - ON PULL-OUT TRAY FLANGES

Two (2) above specified aluminum pull-out trays are to be lined, on sides and outboard perimeter flanges, with 3M P/N CC983-326ES "high conspicuity" alternating 6" long red and 6" long white reflective stripes.

ROLL-OUT TRAYS LINED WITH VINYL TILES

Sectional vinyl tiles are to be furnished, installed on top floor surface of two (2) interior compartment rollout trays. Tiles shall be cut to size and shape of all trays.

The specified 12" x 12" floor tiles are to be BLACK in color.

REFER TO PAINT AND GRAPHICS UNIT FOR FINISHING DETAILS OF TRAYS

VERTICALLY ADJUSTABLE HORIZONTAL SHELF(VES), PAN FLANGED

Four (4) each, perimeter flanged full compartment front-to-rear width x compartment depth fabricated aluminum shelf/shelves to be furnished, clamp-bolted to and removable from adjustable slotted wall tracks.

Each shelf is to be a single piece fabrication, 2-inch perimeter flanged-up, forming a "pan, and providing for a recessed floor surface.

Each compartment adjustable shelf is to rest on, and be bolted to angular metal brackets which are compatible with the specified compartment wall mounted slotted tracks. Each shelf is to be provided with four (4) female threaded cadmium plated spring-loaded "cleats", designed to slide vertically in the specified wall mounted shelf tracks.

Each shelf is to be constructed of .190" smooth unpainted natural finish aluminum, and is to have a load capacity of no less than 400 pounds.

VERTICALLY ADJUSTABLE HORIZONTAL "DEEP" SHELF(VES), PAN FLANGED

Two (2) perimeter flanged full compartment front-to-rear width x compartment depth (19"+) fabricated aluminum shelf/shelves to be furnished, clamp-bolted to and removable from adjustable slotted wall tracks.

Each shelf is to be a single piece fabrication, 2-inch perimeter flanged-up, forming a "pan, and providing for a recessed floor surface.

Each compartment adjustable shelf is to rest on, and be bolted to angular metal brackets which are compatible with the specified compartment wall mounted slotted tracks. Each shelf is to be provided with four (4) female threaded cadmium plated spring-loaded "cleats", designed to slide vertically in the specified wall mounted shelf tracks.

Each shelf is to be constructed of .190" smooth unpainted natural finish aluminum, and is to have a load capacity of no less than 500 pounds.

ADJUSTABLE SHELVING LOCATION(S):

Deep Compartment Shelf/Shelves are to be located in the following compartment(s):

1 ea. P-1:

1 ea. P-3:

ADJUSTABLE SHELVING LOCATION(S):

Shelf/Shelves are to be located in the following compartment(s):

1 ea. D-1:

1 ea. D-3:

1 ea. P-1:

1 ea. P-3:

ADJUSTABLE SHELF TRACKS, LOW PROFILE

Six (6) sets of Laser cut vertically slotted bolt-on "low profile" shelf tracks are to be furnished, mounted two (2) on forward and two (2) on rearward interior side walls of the designated apparatus body side compartments. Tracks are to be designed to accommodate spring-loaded threaded cleats allowing for infinite vertical adjustment of the optionally specified horizontal compartment shelves, NOTE: Cleats are to be provided, only with the optionally specified shelves, four (4) each per shelf.

Shelf tracks are to be fabricated of .125" smooth aluminum with a finish matching that of the shelves and trays, and their design must allow for the shelving width to match the compartment clear opening width.

ONSCENE EXTRUDED ALUMINUM RUBRAIL

OnScene Solutions rub rails are to be provided below the compartment door openings on both the street side (driver side) and curbside (passenger side).

The rub rails are to be fabricated from 6063 extruded aluminum, measuring approximately 2.75" high x 1-.375" thick with tapered aluminum end caps. The rub rails are to be bolted to the body using stainless steel bolts and 1.5" diameter x .625" thick rubber mount isolators to prevent damage to the body.

The rails are to incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rails are to have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting.

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Rub rails are to be bolted in position, easily replaceable.

POLISHED STAINLESS-STEEL FENDER CROWNS

Polished stainless steel fender crowns (fenderettes) will be provided, encircling the radius panel cut-outs of the rear body wheel well housings. Fender crowns to be bolted to and removable from wheel well housings, with nylon spacers provided between mating flanges, to allow "wash-out" of mating areas. The bolt-on fasteners are to be stainless steel, concealed from exterior view.

NOTE: Use of fender crowns, on any manufacturer's 100" wide compartmented apparatus body, causes vehicle to exceed Federal D.O.T. vehicle standards (of 102") for over-all vehicle width, furthermore; fenderettes will extend beyond the purchaser specified rub rails.

SLIDE-IN SUCTION HOSE SLEEVE COMPARTMENT - PASSENGER SIDE

A fully enclosed hard suction hose "sleeve compartment" shall be furnished, located passenger's side, no higher than 38" above the rear tailboard. Hard suction hose sleeve compartment shall extend from rear vertical face of body, outboard the upper level water tank side, to front body panel, at least 9" wide x 22" high x 126" long. Compartment shall accommodate two (2) 10 ft. sections of specified flexible hard suction hose. Rear of body suction hose sleeve compartment shall be equipped with a rear body panel material matching vertically hinged outboard opening access door with: D-ring polished stainless door handle, single-point latch assembly, and polished stainless piano hinge.

TUBULAR HANDRAIL, ONE (1) EACH VERTICAL OPPOSITE REAR BODY LADDER

Apparatus body tubular railings are to be furnished, consisting of: 1-.25" o.d. **stainless steel** tubing, chrome plated double bolt type 3" stand-off end type and center rail brackets, and neoprene rubber surface mounting gaskets furnished between rail bracket and painted or vinyl lined body surface.

Tubular railings at step areas are to be provided with an aggressive machined "knurled" non-slip exterior surface.

Tubular railing shall be provided: opposite the optionally specified rear ladder, mounted vertically inboard (or outboard as is appropriate) the rear compartment corner. Handrail shall begin at 18" above tailboard, extending full height of body compartment corner.

HORIZONTAL REAR HANDRAIL

Matching knurled material tubular railing shall be provided: horizontally full width of hosebody, on rear body vertical panel below hose bed gratings.

DRIVER SIDE SCBA STORAGE IN WHEEL WELL

Two (2) triangular shaped compartment(s) shall be furnished, located in upper corner(s) of wheel well to accommodate three (3) SCBA bottles.

COMPARTMENT INTERIOR COATING
Sleeve segments shall be spray coated with a rubberized material for bottle protection and retention.

For additional protection the interior of specified access door is to be lined with insulated rubber mating.

COMPARTMENT DOOR
Air bottle compartment shall be equipped with weather stripped over-lapping stainless steel door.

Door shall be installed with polished stainless steel piano hinge, laser-cut stainless steel door prop, and a single push-button trigger-latch.

DNMA SWITCH
Bottle storage compartment door shall be equipped with proximity switch to activate DO NOT MOVE VEHICLE LIGHT, and notify driver of an open door condition.

PASSENGER SIDE SCBA STORAGE IN WHEEL WELL

Two (2) triangular shaped compartment(s) shall be furnished, located in upper corner(s) of wheel well to accommodate three (3) SCBA bottles.

COMPARTMENT INTERIOR COATING
Sleeve segments shall be spray coated with a rubberized material for bottle protection and retention.

For additional protection the interior of specified access door is to be lined with insulated rubber mating.

COMPARTMENT DOOR
Air bottle compartment shall be equipped with weather stripped over-lapping stainless steel door.

Door shall be installed with polished stainless-steel piano hinge, laser-cut stainless steel door prop, and a single push-button trigger-latch.

DNMA SWITCH
Bottle storage compartment door shall be equipped with proximity switch to activate DO NOT MOVE VEHICLE LIGHT and notify driver of an open door condition.

EXTENSION AND ROOF LADDERS

Refer to NFPA Equipment Section for optionally specified extension and roof ladders to be furnished.

SLIDE-IN STORAGE FOR LADDERS & PIKE POLES, DRIVER AND PASSENGER SIDES

Two (2), horizontal storage cavities are to be furnished, one (1) driver's side outboard upper side of water tank, full length of body, and one (1) passenger's side outboard water tank, full length of body. Storage cavities are to accommodate: Passenger's side tray mounting for specified extension ladder, driver's side tray mounting for roof ladder/folding ladder/PVC tubing storage for two (2) pike poles. Ladder storage cavities are to be approximately 38" above rear tailboard, each provided with a vertically hinged rear body panel material matching access door with chrome plated lift and turn latch assemblies.

Ladder tracks, for extension and roof ladders only, are to be lined on bottom with nylon for easy "slide-out".

SLIDE-IN LADDER STORAGE SLEEVE, FABRICATED OF ALUMINUM

The above specified ladder slide-in metal storage brackets and trays are to be enclosed on top/sides/botom/front, in a sleeve compartment, accessible through an opened rear door. The sleeve enclosure is to be fabricated of smooth sheet machine sanded (unpainted) aluminum.

FOLDING LADDER TRAY, SLIDE-IN TRAY

A fabricated metal "tray" shall be furnished, designed to accommodate a DuoSafety folding attic ladder. The tray shall be located in the specified horizontal "slide-in" ladder compartment.

GROUND LADDERS - TO BE ACCOMMODATED, IN SPACE(S) PROVIDED ABOVE:

Extension Ladder: Brand DuoSafety Model 900A, 2 Sections, Extended Length 24 ft. Nested Length 171 Inches, Nested Width 21.75" Inches, Stacked Height (Thickness) 3.75 Inches

Roof Ladder: Brand Duo Safety Model 775-A, Overall Length 171 inches, Overeall Width 19 Inches Height (Thickness) 2.75 Inches

Folding Ladder: Brand DuoSafety Model 585A, Rail Height (Thickness) 1.75" Inches, Collapsed Width 4.25" Inches, Collapsed Length w/Foot Pad 169 Inches.

NOTE: The above information is for "mounting accomodations" ONLY, refer elsewhere in these specifications, for Vendor, Contractor, or Customer ladders to be provided.

PIKE POLES

Refer to NFPA Equipment Section for optionally specified Pike Poles to be furnished.

PIKE POLE MOUNTING, WITH THE SUCTION HOSE

Mountings are to be provided for two (2) pike pole(s) to be located in the specified horizontal suction hose sleeve compartments.

STAINLESS STEEL REAR ACCESS LADDER

A fold-out and swing-down access ladder is to be furnished and installed on rear body surface.

For superior strength and serviceability the entire ladder assembly, including steps, rails and brackets are to be constructed of fabricated 304 grade brushed-finish stainless steel, and assembled using .25" coated stainless steel fasteners with NyLock nuts. Welding is not to be used in the construction of the ladder or its brackets.

Ladder steps are to channel fabricated, spanning the full horizontal width, from rail to rail. Step surfaces are to be flat, minimum depth of 3-inches and provided with multiple rows of an aggressive non-slip self-draining puncture grip pattern. The corner of the step's outboard flange is to be provided with multiple evenly spaced saber shape tabs. The tabs are to extend slightly above the top step surface, so as to limit foot slippage when climbing, The non-slip grip and tab pattern is to have been tested and “certified” to be NFPA approved.

Ladder shall be equipped with dual vertical knurled tubular Stanless Steel hand rails on upper section. Rail brackets are to be angled outward, on each side of ladder, so as to not obstruct the climbing width.

A bottom ladder section is to be provided, which flips-over and down 180-degrees away from top section, extending to below the tailboard level, for improved ground level access.

Ladder is to "nest" close to the vertical rear surface when stowed and swing out when deployed, to provide at least a 10-degree (off vertical) sloped climbing angle. Dual compressed gas struts are to be incorporated into the ladder design, to assist and cushion the movement of the lower ladder section providing an effortless hand operated deployment. Manual latches are not be required for the operation or securement of ladder.

Step depth, tread pattern, and step spacing shall be NFPA compliant.

NFPA REQUIRED FIRE HOSE AND NOZZLES - END USER RESPONSIBILITY

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish and appropriately mount any and all Fire Hose and Nozzles not listed herein but as required by the most recent standards prior to placing this vehicle in service.

NFPA REQUIRED GROUND LADDERS:

All Fire Department ground ladders carried on the apparatus shall meet the requirements of NFPA 1901, unless acceptable substitutions are designated.

2-SECTION EXTENSION LADDER

One (1) Duo-Safety 24 ft. model 900-A 2-section aluminum ladder shall be furnished, with rope hoist.

ROOF LADDER

One (1), Duo-Safety 14 ft. model 775-A aluminum roof ladder shall be furnished with folding roof hooks.

NFPA REQUIRED ATTIC LADDER:

The Fire Department Attic Ladder carried on the apparatus shall meet the requirements of NFPA 1901, unless an acceptable substitution is designated.

FOLDING LADDER

One (1), Duo-Safety 10 ft. model 585-A aluminum folding attic ladder shall be furnished.

FOLDING LADDER MOUNTING

The folding ladder is to be mounted as is described in the Apparatus Body portion of the specifications.

PIKE POLE, 6-FOOT FIBERGLASS

One (1), DuoSafety or equivalent 6 ft. “pike” pole(s), with fiberglass straight pole shall be furnished.

PIKE POLE, 10-FOOT FIBERGLASS

One (1), DuoSafety or equivalent 10 ft. “pike” pole(s), with fiberglass straight pole shall be furnished.

PIKE POLE MOUNTING(S)

Please refer to the Apparatus Body Section for description of Pike Pole mounting location(s).

AXES - END USER RESPONSIBILITY

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish, the minimum axes specified prior to putting this vehicle in service.

FIRE EXTINGUISHERS - END USER RESPONSIBILITY

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish, the minimum fire extinguishers specified prior to putting this vehicle in service.

WRENCH HOLDERS - END USER RESPONSIBILITY

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish, the minimum wrench holders specified prior to putting this vehicle in service.

WHEEL CHOCKS

See above MODIFICATIONS TO CHASSIS segment, for wheel chocks to be provided.

HAND LANTERN(S) - END USER INSTALLED

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish prior to placing in service, a minimum of two (2) appropriate portable hand lights, mounted in brackets fastened to the apparatus.

NFPA REQUIRED MISCELLANEOUS - END USER RESPONSIBILTY

NOTE In order to meet the current requirements of NFPA 1901 it is acknowledged that the end user will furnish and appropriately mount any and all equipment not listed herein but as required by the most recent standards prior to placing this vehicle in service.

NUTS, BOLTS, SCREWS

One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit shall be supplied to mount loose equipment items.

ELECTRICAL - 12 VOLT

NFPA RELATED NON-EMERGENCY 12-VOLT ELECTRICAL STANDARDS:

ELECTRICAL WIRING INSTALLATION - 12 VDC
All electrical circuit wiring installed by the apparatus body builder is to be stranded copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the current is protected. Wiring is to be colored and/or printed with circuit function code over each conductor's entire length.

Original non-protected chassis wiring, extending to rear, including: left turn circuit, right turn circuit, brake circuit, and back-up light circuit is to be re-routed to the interior chassis cab. New replacement color coded legend imprinted SXL insulated multi-stranded copper chassis wiring is to extend from chassis cab to rear body electrical chassis functions. Wiring is to be enclosed inside specified apparatus body in heat resistant vinyl loom.

AMBER TURN LIGHT ACTIVATION
Dedicated wiring shall be provided from chassis turn signal control, to the rear of the apparatus, for signaling of the specified apparatus body left and right side rear amber turn lights. Rear amber turn lights are not to be activated by brake lights.

ELECTRICAL WIRING INSTALLATION PERFORMANCE - 12 VDC
All wires are to be of sufficient size so that voltage drop in any electrical device shall not exceed 15%.

BATTERY CABLE INSTALLATION STANDARDS

Chassis battery cables are to be routed from batteries' common positive to engine starter, return from engine starter to battery switch, and from battery switch to the chassis power distribution terminal post and to post located on a frame rail, and then to the apparatus body power distribution center (PDC). All battery cables are to be appropriately sized welding cable, heavily insulated super fine multi-stranded copper enclosed within high temperature vinyl loom and equipped with plated copper soldered terminals/lugs. Edge protector or rubber grommet is to be furnished where ever battery cables pass through sheet metal panels.

AUDIBLE DEVICE INSTALLATION STANDARDS
When furnished, air horns, electric siren, electronic siren speakers, and other audible emergency equipment are to be mounted as low and as far forward on the apparatus as practical. Audible warning equipment is not to be mounted on the roof of the chassis cab.

NON-REMOVABLE IGNITION DEVICE
The chassis ignition actuation is to be by a rotary/toggle style switch, or by a key switch with key permanently chained to the dashboard.

WIRING HARNESSES

All apparatus body wiring for specified lights and electrical equipment is to be suitably protected inside heat resistant vinyl, forming multiple harnesses. Multiple harnesses are to run from chassis cab and apparatus body to a PDC (power distribution center). Harnesses are to consist of individual legend imprinted multi-stranded copper color coded SAE-J 1128 compliant automotive wires inside vinyl loom. Spare wires are to run throughout the apparatus compartmented body so as to allow for future installations of electrical accessories, while using original harnesses. All wiring is to be identified, "imprinted" with number and/or function. Auto-reset circuit breakers are to be furnished, of various amperage capacities, sized for intended load.

All 12-volt switches, relays, terminals, connectors, and wiring are to have a direct current rating of 125% of maximum current for which the current is protected. All wiring terminals are to be machine crimped, pull-tested during assembly.

APPARATUS BODY POWER DISTRIBUTION CENTER

An enclosed 12 -Volt electrical cavity is to be provided in the driver's side lower front compartment. This cavity is to be recessed inboard a front compartment removable bulkhead, of adequate size. to house all of the body wiring junction points, terminal strips, relays, etc. The design of this cavity must not decrease the storage capacity area of the compartment in which it is located. A flush mounted removable panel is to be provided for access to this cavity.

The power distribution center is to be located interior of 12 -Volt electrical cavity, and is to contain engineered electrical components and waterproof pin/socket bulkhead connectors. Multiple circuit breaker sockets are to be furnished for future use.

BATTERY CABLE UPGRADE

A 600 amp fuse protected 2-0 multi-stranded copper insulated battery cable is to be run inside protective loom, extending from specified battery disconnect to a chassis frame mounted threaded copper stud, providing power to high amperage items such as: primer motor, electrical discharge valves, reel rewind motors, generator starter motor, etc.

"Vehicle Specific" wiring information is to be provided for this particular apparatus "as built" upon completed delivery of the same. Information to be in spreadsheet format, describing PDC connections and functions.

APPARATUS LIGHTING INSTALLATION STANDARDS:

All specified 12-volt to be in accordance with D.O.T. regulations at time of purchase.

WALKWAY, STANDING PLATFORM, AND WORK AREA LIGHTING

Specified standing, stepping, and walking surface lighting shall be located to minimize accidental breakage.

LIGHTING INSTALLATION REQUIREMENTS

All specified light fixtures to be located/fitted prior to and re-installed after finish painting. Where fixture wiring passes through metal body panel, the pass-thru hole to be equipped with a rubber grommet. All specified light fixtures shall be installed, using stainless steel screws with non-metallic "replaceable" threaded inserts, to allow removal of light fixture, from exterior of body. Where light fixtures are to be installed on a painted panel, all light fixture mounting holes, grommet holes, and fastener holes shall be machined/cut-out prior to prime and finish painting, so that all metal edge surfaces receive the same protective coating. Where holes are cut or drilled, after finish painting, same holes shall receive paint finishes prior to insertion of fasteners and threaded inserts.

FMVSS LIGHTING CONFIGURATION

The following specified rear body tail/stop turn and back up lights to be positioned: Red (tail/stop) TOP, Amber (turn) MIDDLE, and Clear (back up) BOTTOM, driver's and passenger's side rear of body.

VEHICLE DATA RECORDER AND SEAT BELT WARNING DEVICE

A Weldon Vehicle Data Recorder with seat belt warning device shall be furnished and installed in the chassis cab. Software shall be delivered with the apparatus capable of producing the minimal reports as required by the NFPA 1901 current edition.

> Vehicle speed
> Vehicle acceleration
> Vehicle deceleration
> Engine speed
> Engine throttle position
> Anti lock braking system event
> Seat occupied status
> Seat belt status
> Master optical warning device switch
> Time
> Date

An electronic display shall be provided in the cab to indicate passenger location and seat belt status. The display includes visual and audible warning of unsafe occupant conditions.

ELECTRICAL CONSOLE BETWEEN FRONT SEATS

A custom-built fabricated aluminum electrical console to be furnished, inside chassis cab, between driver's and officer's seats. Console to be of maximum width, with top surface same height at driver's and officer's seat bottom cushions. Top surface of electrical console to accommodate specified switch panel, pump shift assembly, battery switch, and other following specified accessories. Console to be "DA" natural aluminum finish.

ROCKER SWITCH PANEL - WITH MASTER ROCKER - ON CONSOLE

Specified emergency lighting fixtures, non-emergency lighting fixtures, and electrical components are to be individually activated by fully illuminated rocker style switches. Emergency lighting switches to be illuminated RED, non-emergency switches to be illuminated a contrasting color. An illuminated red switch shall be furnished to left of emergency lighting rocker switches, identified as "MASTER WARN SWITCH". Master Warn Switch to provide power for individual emergency lighting switches. Back-lit nametags, describing function of each individual switch, to be located above toggle and rocker switches. Switches are to be mounted in such a way so as to prevent windshield glare.

Controls and switches, which are expected to be operated by the driver while the apparatus is in motion, are to be within convenient reach of the driver. The controls to operate the siren to be within convenient reach of both driver and front passenger (officer).

MASTER BATTERY SWITCH

The chassis provided On-Off Battery Cut-Off Switch is to be exchanged for a ColeHerse model 75908, high amperage two-position battery "cut-off" switch. Additionally a green "battery-on" pilot light is to be furnished visible to the driver. OEM battery cables, and switch location are to be retained.

KUSSMAUL AIR INLET - WITH AUTO EJECT

One (1), Kussmaul model 091-28 air shoreline automatic "air eject" is to be furnished, complete with: female coupler with built-in check valve (shipped loose), vehicle mounted male coupler with built-in check valve, appropriate high pressure vinyl airline tubing with brass fittings, and appropriate 12-volt wiring to the vehicle starter system. Air shoreline is to be piped to the chassis primary air system reservoir (wet tank), so as to allow "keep full" of the chassis air system when connected to fire station air supply.

One (1), Kussmaul model 091-28AK air eject weatherproof adapter kit is to be furnished, complete with panel mounted spring loaded cover, cover gasket, and polypropylene sleeve. Inlet is to be labeled: AIR INLET.

AUTO EJECT COVER COLOR

The furnished Air Eject weather proof cover shall be YELLOW in color.

AIR SHORELINE AUTO-EJECT LOCATION

The above specified Air Shoreline Auto-Eject is to be located, below the Speed-Lays, on the Crew Cab exterior compartment door, driver side.

LED REAR STEP LIGHTS

Three (3)each, 12-volt Grote model 60571 LED courtesy step lights are to be furnished, located to illuminate step surfaces at the rear of the body. Light fixture to have polished stainless bezel and shielded clear polycarbonate lens. Lights to be activated by parking brake set.

DOT LIGHTING

REAR LED ID/MARKER LIGHTING

Five (5), rectangular surface mount 12-volt dual LED bulb marker lights with red reflective lenses to be furnished, located: two (2) recessed into outboard rear tailboard corner flanges, and three (3) recessed behind center rear tailboard flange. Diamond shape cut outs are to expose light fixtures. Marker lights to be activated by headlamp switch.

The three (3) LED marker lights located at the rear to be:

- As close as practical to the vertical Centerline.
- Centers spaced not less than six (6) inches or more than twelve (12) inches apart.
- Red in color.
- All at the same height.

The two (2) LED outboard marker lights located at the rear shall be installed:
To indicate the overall width of the vehicle.
At the same height.
To be visible from the rear and the side.

MID-TURN/MARKERS
Two (2), surface mount mid-ship Weldon model 9186-8580-29 LED dual element, combination marker and turn lights, are to be furnished, located: one (1) driver's side mid-ship vehicle and one (1) passenger's side mid-ship vehicle. Light fixtures are to have Amber lens. Marker Light is to be steady on with headlights, Turn Lights are to have flashing element, activated by vehicle turn signals.

Per FMVSS 108 and CMVSS 108 requirements.

STOP/TAIL LIGHTS

Two (2), Whelen model 600, Red element 5" x 8" rectangular surface mount LED combination stop/tail lights to be furnished, mounted each side at rear of body. Lights to be wired for activation by service brake and headlamp switch.

REAR TURN SIGNALS

Two (2), Whelen model 600, Amber element 5" x 8" rectangular surface mount LED turn signal lights with populated arrow shape and multiple flash patterns to be furnished, mounted one each side at rear of body. Lights to be wired for activation by left or right turn signal (not by brake lights).

BACK-UP LIGHTS

Two (2), Whelen 600, Clear element rectangular surface mount LED back up lights to be furnished, mounted one each side at rear of body. Lights to be wired for activation by reverse gear of truck transmission.

Above specified lights to include appropriate “chrome plated” 6EFLANGE(s) and be bolted in position, evenly spaced, driver's side and passenger's side rear body corners.

BACK-UP ALARM

One (1), 12-volt Ecco model 520 electronic back-up alarm to be furnished, mounted at rear below body, activated by reverse gear of truck transmission.

CAST LICENSE PLATE BRACKET, LIGHTED

A Cast Products LP005-1-A polished cast metal license plate bracket with 12-volt Truck-Lite LED overhead light shall be furnished, installed per DOT regulations on the rear of the vehicle.

DO NOT MOVE APPARATUS " HAZARD" INDICATOR LIGHT

An LED style flashing indicator light shall be furnished, installed on cab dashboard, visible to driver, and as per current NFPA requirements, the light shall be illuminated automatically, as listed below:

The light shall be labeled "**DO NOT MOVE APPARATUS IF LIGHT IS ON**".

DEVICES WHICH ACTIVATE THE "DO NOT MOVE APPARATUS" INDICATORS

Opened chassis cab doors, crew cab doors, and/or open apparatus body exterior compartment doors, are to activate/illuminate the above specified "DO NOT MOVE APPARATUS" hazard warning indicator light.

COMPARTMENT INTERIOR LIGHTING

See APPARATUS BODY segment of specifications, for description, and location of provided body compartments interior lighting.

ENGINE COMPARTMENT LIGHT, LED

One (1), 12-volt LED engine compartment interior light to be furnished on firewall.

Light to be activated by park brake.

PERIMETER UNDERCAB LIGHTS

Two (2) each, 4" LED grommet mount under chassis cab 12-volt ground lights to be furnished, located one (1) driver's side and one (1) passenger's side, beneath cab doors. Lenses to be 4" diameter, Clear. Lights to be completely sealed for weather resistance. Lights to be activated by setting of the parking brake.

PERIMETER UNDERBODY LIGHTS

Five (5) each, 4" LED grommet mount under body 12-volt ground lights to be furnished, located: two (2) each driver's side ahead of and behind rear wheels, two (2) each passenger's side ahead of and behind rear wheels, one (1) each center rear underside tailboard. Lights to be completely sealed for weather resistance, lenses 4" diameter. Lights to be wired for activation by setting of the parking brake.

12-VOLT BROW FORWARD FACING SCENE LIGHTING

CAB ROOF "BROW" LIGHT, 12-VOLT LED

One (1) Fire Research model SPA800-Q15, SPECTRA Contour Brow Mount LED 12-volt scene light is to be furnished, mounted on Crew Cab front roof cap, centerline forward-facing. The bow light is to measure 14.5" wide x 5-.875" tall x 1-4/5" deep and have total of 15000 Lumens. The front scene light is to be activated by an illuminated rocker switch, accessible to driver, and properly identified.

12-VOLT SIDE FACING SCENE ROOF PERIMETER SCENE LIGHTING

CAB ROOF SIDE-FACING SCENE LIGHTS, 12-VOLT LED

Two (2) Fire Research model SPA830-Q15, SPECTRA Roof Radius Mount LED 12-volt scene lights are to be furnished, mounted on Crew Cab roof cap sides, 1-Driver side and 1-Passenger side, overhead the Crew Doors. The scene lights are to measure 14.5" wide x 5-.875" tall x 1-4/5" deep and each have total of 15000 Lumens. The scene lights are both to be activated by an illuminated rocker switch, accessible to driver, and properly identified.

TELESCOPIC 11K LM FLOODLIGHT

Two (2) Fire Research Evolution model FCA530-V11 side mount push up telescopic lights shall be installed. The light poles shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 .5" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamphead is to be LED Scenelight style DC 11K lm.

Location of floodlight shall be on front Crew Cab corner(s).

The lights shall be load managed, when park brake is set.

Lights to be wired to Do Not Move Truck Warning Indicator Light.

Lights to be switched per Customer instruction.

APPARATUS BODY 12-VOLT SCENE LIGHTING

SIDE SCENE LIGHTS ILLUMINATE WITH PUMP PANEL SWITCH

The above specified SIDE FACING scene lights shall illuminate, with activation of a pump panel switch.

12-VOLT OVERHEAD REAR FACING SCENE LIGHTS

The following specified Rear-Facing Scene Light is to be located at the uppermost centerline of the Rear Body Panel.

LED REAR FACING SCENE LIGHTING, 20" COMBO

One (1) each, Rigid Industries SR-20-COMBO model 920313, black 20" low profile LED scene light to be furnished and installed. Light fixture is to be recessed into a brushed stainless steel housing, of minimum size to accommodate the fixture and allow for heat dissipation. Housing is to be provided with a perimeter surround flange and an exterior of body trim bezel. Housing and trim bezel are to be sandwich bolted to matching pattern body panel cut-out.

12-VOLT REAR SCENE LIGHT SWITCHING, CAB SWITCH AND REVERSE GEAR

Specified 12-Volt scene light(s) are to be activated by two (2) sources. one (1) cab dashboard switch is to be provided, in addition to cab switching, lights are to be activated by reverse gear of vehicle transmission. Switch is to be labeled to identify location and type of lights to be switched.

AIR HORN(S)

See CHASSIS segment of specifications, for description of: Air Horns to be furnished, Activation Device(s), and mounting locations for same components

ELECTRONIC SIREN

One (1), Whelen model 295SLSA1, "Hands Free" electronic siren amplifier w/park-kill feature, selectable 100 or 200 watt output to be furnished. Electronic siren to have a "piercer" tone. A permanently wired microphone to be furnished with coil cord and mounting clip. Siren amplifier to be wired to specified electronic speaker(s).

Siren control head shall be located Surface mounted to center console.

100 WATT SPEAKER

One (1), Whelen model SA315P, 100-watt rectangular concealed speaker to be furnished, located recessed behind front bumper. Vertical surface of front bumper to be "cut-out", back side (between bumper and speaker) furnished with polished stainless steel speaker grille.

CAB ROOF LIGHTBAR: WHELEN FREEDOM, 55" RED and CLEAR LED ELEMENTS

One (1ea), Whelen "Freedom" model F4N2VLED, 55" long Linear-LED light bar shall be furnished and installed, permanently mounted to forward roof top of chassis cab.

Light bar shall be provided with:

Six (6) red LED's, located: 2-forward facing, 2-front corners, 2-rear corners.

Two (2) clear LED's, located: 2-forward facing.

Light bar shall be switched in the chassis cab, identified as: "CAB ROOF LIGHTBAR"

All lenses are to be clear, with clear and red light elements, as specified.

NOTE: Activation of vehicle's Parking Brake shall disengage any forward facing clear lights.

TRAFFIC DIRECTING LIGHT BAR - REAR OF BODY

One (1), Whelen model TAL65 Traffic Directing 36" wide light bar with six (6) Amber LED lamps and one (1) TACTRL1 control head is to be furnished. The light bar is to be surface mounted at center rear of body, as high as possible. Control head is to be installed inside driver's compartment, location as designated by Customer.

REAR BODY TRAFFIC BAR PROTECTION

The optionally specified rear body mounted traffic light bar is to be surface mounted to rear face of the apparatus body, beneath a tubular rear horizontal handrail which is located so as to protect the light bar and lenses.

HORIZONTAL REAR HANDRAIL, BELOW HOSE BED

Matching material tubular railing is to be provided, horizontally on rear body vertical panel below the hose bed gratings. Railing is to be as wide as is possible, without causing interference with optionally specified rear inlets/outlets or step assemblies.

GRILLE WARNING LIGHTS - LED

Two (2), Whelen 500 series, TIR Super LED, 5" x 1-.625" rectangular surface mount LED light heads and two (2) 5TSMAC chrome plated surrounds to be furnished, surface mounted located on front grille. Light elements to be RED light lens to be RED. Lights to be activated by a separate illuminated rocker switch, identified by function.

FRONT LOWER LEVEL LED WARNING LIGHTS

Two (2), Whelen model 500 series TIR6 Super LED rectangular lightheads and two (2) 5TSMAC chrome plated surrounds to be furnished, surface mounted located driver and passenger front bumper sides or hood/cab sides. Light lenses to be driver's Red, passenger's side Red. Lights to be activated by a separate illuminated rocker switch, identified by function.

LOWER LEVEL BODY WHEEL WELL WARNING LIGHTS

Two (2), Whelen model 60R02FRR, 6" x 4" rectangular LED light heads with two (2) 6EFLANGE chrome flange surrounds to be furnished, surface mounted, one (1) on each side of the apparatus in the forward or rear portion of the rear body wheelwells. Light lens to be Red, passenger side and driver side. Lights to be activated by the illuminated rocker switch, identified by function.

ZONE C, REAR OF BODY LOWER LEVEL LED WARNING LIGHTS

Two (2), Whelen 600 Series model 60R02FRR, 6" x 4" rectangular surface mounted Super LED light heads and two (2) 6EFLANGE chrome plated surrounds to be furnished, located one (1) driver's side lower rear body corner, one (1) passenger's side lower rear body corner. Light lenses to be driver's side Red, passenger's side Red. Lights to be activated by specified switch, identified by function.

REAR ZONE B-C-D, UPPER LEVEL LED LIGHTS: 1-"B", 4-"C", AND 1-"D"

Six (6), Whelen 500 series TIR6 Super LED rectangular surface mounted light heads, with six (6) each 5TSMAC chrome plated surrounds, to be furnished and mounted: two (2) rear upper sides (1-each side) two (2) driver's side rear and two (2) passenger's side rear "stacked" one above. All light elements and light lenses to be RED. Lights to be activated by specified switch, identified by function.

PAINT PROCESS

Body surfaces which are to be painted, are to be cleaned using DX436 wax and grease remover. Next, the entire to be painted surface is to be sprayed with F3963 Etching Primer which exhibits very good adhesion and corrosion resistance. A high build primer surfacer, F3975, is to then be applied directly over the etch primer. After allowing the primer surfacer to air dry, the entire unit is to be sanded using dual action sanders leaving a very smooth surface to be painted.

The paint applied to the apparatus shall be PPG Industries Delfleet® Evolution brand, applied throughout a multi-step process including at least two coats of each color and clear coat finish.

Special attention will be given to proper application of coatings according to the specified film build (wet and dry) recommendations of PPG. Product or technical data bulletins should be consulted for any needed information above that which has been outlined herein. All paint materials shall be prepared and applied in accordance with this specification and the paint manufacturer's latest written recommendation prior to paint application.

The coating shall be baked or air dried. The coatings shall provide full gloss when finished curing and must be suitable for application by conventional pressure air atomizing spray.

Body panels and sub-frame area which cannot be painted after assembly shall be pre-primed and painted prior to main painting process.

The coatings shall not contain lead, cadmium or arsenic. The polyiscoyanate component shall consist of only aliphatic isocyanates, with no portion being aromatic isocyanate in character. The solvents used in all components and products shall not contain ethylene glycol, mono-ethyl ethers, or their acetates (commercially recognized as cello solves), nor shall they contain any chlorinated hydrocarbons. The products shall have no adverse health effects or present any unusual hazard to personnel when used according to manufacturer’s recommendations for handling and proper protective safety equipment, and for its intended use.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The specified apparatus body painted surfaces shall receive the primer coats and the finish coats. These painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects.

HIGH LUSTER BUFFING

The specified color painted components (except roll-up door slats) shall be "wet" color sanded with ultra-fine media, machine buffed with rubbing compound and wool pad, machine buffed with glaze and foam pad, and hand wiped to remove residue.

PAINT COLOR

Finish color of the apparatus body exterior and painted accessories shall be of a single color to match major chassis cab exterior color.

Unless otherwise specified, the **c**hassis frame, axles, and suspension shall remain the OEM color of Black.

COMPARTMENT INTERIORS
The enclosed compartment interiors, side and rear, are to be unpainted natural smooth metal finish. Where body material is aluminum, the metal is to have a machine "swirl" finish (marbled), consisting of 80-grit 4-inch diameter circular patterns overlapping each other. Where metal specified to be stainless steel, the finish is to be mill polished #4-brushed.

COMPARTMENT FABRICATED ACCESSORIES
The optionally specified fabricated compartment accessories (shelves and boards, etc.), are to be unpainted natural smooth metal finish. Where material is aluminum, the metal is to have a machine "swirl-pattern" finish, where metal is stainless steel, the finish is to be #4-brushed.

BODY RE-ASSEMBLY
During reassembly of all individually painted fabricated components, special care shall be taken to prevent deterioration of top paint coats of mating flanged areas. Fabricated accessory components, which have been removed prior to painting, shall be seal coated where mated to dissimilar metal painted components. Accessory fabrications to be installed using stainless steel button socket head cap screw fasteners. Edges of accessories, where meeting exterior body painted fabrications, shall be properly caulked with G.E. or equal silver metallic body sealant to prevent moisture accumulation between metal layers.

TOUCH-UP PAINT
One (1), full quart of original finish color top coat paint material shall be provided for use as future touch-up paint.

INTERIOR COMPARTMENTS: "DA-SANDED" MACHINED FINISH

The natural unpainted smooth aluminum interior surfaces of all apparatus body interior compartments are to be provided with a DA-machine sanded finish. Machining of the metal surfaces (both sides) is to be performed after profile cutting of the individual metal body parts, and prior to the fabrication of same, so as to insure that all surfaces receive same machined pattern, including integral brake-flanges.

DA ORBITAL SANDED FINISH ON BULKHEAD WIRE COVERS

The optionally specified interior compartment front and rear bulkhead wire covers are to be completely machine sanded, where exposed inside compartment, with a dual-action orbital abrasive sander, providing a scuff resistant light abraded natural aluminum finish.

DA ORBITAL SANDED FINISH ON ROLL-OUT TRAY(S)

The optionally specified two (2) each Roll-Out Tray(s) to be completely machine sanded, on interior floor and perimeter flanges, with a dual-action orbital abrasive sander, providing a scuff resistant light abraded natural aluminum finish. DA sanding of the metal surface is to be performed after profile cutting of tray and prior to its fabrication.

DA ORBITAL SANDED FINISH ON SHELVES

The optionally specified six (6) each Shelves are to be completely machine sanded, fully on topside and underside, with a dual-action orbital abrasive sander, providing a scuff resistant light abraded natural aluminum finish. DA sanding of the metal surface is to be performed after profile cutting of shelf and prior to its fabrication.

CHASSIS FRAME AND DRIVE TRAIN FINISH, TO REMAIN ORIGINAL OEM FINISH

The chassis frame assembly is to remain the color and paint quality as received from the chassis manufacturer (OEM). The frame and drive train components are not be repainted.

Components that are considered part of the "frame assembly" are frame rails, cross members, axles, suspension, steering gear and the fuel tank.

DISSIMILAR METALS CORROSION PREVENTION

In an effort to prevent "dissimilar metals corrosion" all apparatus ferrous and non-ferrous metals shall be isolated from one another, using barrier tapes, vinyl or rubberized coatings, and other methods to isolate the mating surfaces. Where aluminum and steel or stainless steel are "mated", the entire mating surface must be lined or coated, even where surfaces are already prime and/or color coat painted.

Since all fasteners must be stainless steel, it is imperative to provide fasteners with the smallest possible head profile, such as button-socket-head cap screws, in lieu of pan head or truss head screws. Additionally, all screw and nut fasteners shall be coated with "Harpen Wax" to prevent fastener discoloration when exposed to dissimilar aluminum. Rubber and/or vinyl washers shall NOT be used, as they collapse as allow fasteners to loosen.

Where stainless steel piano hinges are bolted to aluminum, the hinge leaf shall first be lined with a brush on undercoating.

ADDITIONAL CORROSION PREVENTION

In addition to the above specified corrosion prevention, the apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to prevent electrolysis and corrosion between dissimilar metals.

All .375" diameter and smaller screws and bolts shall be stainless steel with a wax coating, designed to reduce the potential for electrolysis and corrosion to occur where items are assembled and attached.

CUSTOMER TO PROVIDE NFPA COMPLIANT REFLECTIVE STRIPING OR GRAPHICS

The purchaser (customer) is to provide and apply the NFPA compliant Reflective Striping and/or Graphics package, after delivery of the completed apparatus.

CHEVRON STRIPING, REAR OF APPARATUS, ORALITE V98

Up to72 square feet of NFPA compliant color and pattern 6" multiple diagonal ORALITE V98 (formerly Reflexite) reflective stripes are to be provided, full width at rear of apparatus body. Stripes are to form "Chevrons", using alternating Solid Red/Fluorescent Yellow-Green reflective stripes, only interrupted by the rear apparatus lighting, handrails, steps, and other bolt-on accessories. Chevron patterned material is to be applied on to the flat metal "painted" surface, prior to the final installation of the specified bolt-on (removable) fixtures and accessories. Stripes shall be oriented at 45-degree angle, sloping downward and away from centerline of vehicle.

LINE VOLTAGE SHOREPOWER ACCESSORIES

120-VOLT SHORELINE "SUPER" AUTO-EJECT FOR SHORE POWERED DEVICES

One (1) each, 20-Amp Kussmaul model 091-55-20-120 "Super Auto-Eject" automatic shoreline disconnect is to be furnished with; recessed 3-wire straight blade male receptacle, one (1) eject compatible 3-wire female receptacle plug (shipped loose for attachment to customer's provided power cord), and a colored spring loaded weatherproof Auto-Eject cover plate. The auto shoreline disconnect device is to be held in position with four (4) cover plate screws. The Super Auto-Eject is to be wired to the vehicle's 12-volt engine starter or momentary starter switch; such that when the engine is "cranked" the device ejects the line voltage powered cord receptacle.

Back side of auto shoreline disconnect device is to be completely sealed in a non-corrosive waterproof enclosure, with device's external wiring equipped with water-tight connectors. All wiring, extending to the specified shoreplug powered devices, is to be insulated weatherproof jacketed and properly protected to prevent damage.

The specified mating 3-wire female receptacle plug is to be a Kussmaul product, so as to be compatible with eject device.

SHOREPOWER RECEPTACLE LOCATION

The above specified line voltage shorepower receptacle is to be located, below the Speed-Lays, on the Crew Cab exterior compartment door, driver side.

SHOREPOWER COVER COLOR

The furnished weather proof cover shall be RED in color.

ON-BOARD BATTERY CHARGER - 15 AMP

A Powermax 15-AMP output/120-volt input fully automatic single 12-volt battery system charger shall be furnished, installed inside the chassis cab. System to be protected against reverse polarity, and 2-way radio interference. Charger to be powered by the specified 120-volt shoreplug receptacle.

Charger is to be provided with a Digital Volt Display visible from exterior ground level, through open door or window.

LINE VOLTAGE SYSTEM ACCOMMODATIONS:

The following line voltage accessories shall be provided, for use with a future installed line voltage power source (generator).