

PREREQUISITE BIDDING REQUIREMENTS

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

- The manufacturer of the apparatus herein specified, shall be wholly owned (100%) and managed by a Company, Corporation, and/or Parent Company that is wholly based and permanently resides in the United States of America.
- The Company, Corporation, and/or Parent Company, and all assets belonging to such, shall be wholly owned and managed (100%) by the entities specified above.

Any proposal, bid, or response to these specifications by any foreign based, owned, or managed (in part or in whole) Company, Corporation, and/or Parent Company shall be cause for immediate rejection. Any proposal, bid, or response to these specifications by any Company, Corporation, and/or Parent Company, that is owned, operated, managed, or held in contract, in part or wholly by a partnership or other agreement, shall be cause for immediate rejection.

Exceptions to these conditions will not be allowed under any circumstances.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser of a complete apparatus equipped as herein specified. With a view to obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover the general requirements as to the type of construction, together with certain details as to finish, equipment, and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 50 years.

Each bidder shall furnish satisfactory evidence of his ability to construct the apparatus specified. The bidder shall also show that they are in a position to render prompt service and furnish replacement parts for said apparatus.

CONTRACTOR'S SPECIFICATIONS

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform.

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

TIMELY PROPOSALS

It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, facsimiles, e-mails, telegram, or telephone bids shall not be considered.

DRAWINGS

All bid drawings shall be stamped PROPOSAL.

- A total of six (6) drawings shall be supplied. The provided drawings can be printed to any paper size, but the scale will only be valid when printed to the paper size listed in the title block
- Drawings shall show five (5) views: left (drivers), right (officers), front, rear, and top
- OAL (overall length) in feet and inches. The estimated length shall be rounded up to the nearest inch
- OAH (overall height) in feet and inches. The estimated height shall be rounded up to the nearest inch
- Wheelbase in inches
- Pump house width in inches
- Front of the body to the centerline of the rear axle in inches
- Front and rear overhang in inches
- Angle of approach and departure
- Roll up doors will be shown in open position. Lap doors will be shown in the closed position
- Compartment dimensions shall be shown in a table on the drawing. The table shall display:
 1. Clear door opening – The width/height of the clear door opening
 2. Interior dimensions – The interior compartment dimensions excluding any accessories or pockets (i.e. roll up door drums, hard suction hose pans, suspension pockets, etc.)
 3. Divide heights – The measurement where the compartment changes from full depth to shallow depth
 4. Compartment depths – Depth of the compartment with the door closed
- Ground ladders shall be labeled with a letter designation referring to the table for an explanation of the ladder
- No pump panel or instrument panel controls, discharges or inlets shall be shown. The panel space is to be left blank and labeled "Pump Panel"
- Rear plumbing, such as 2-1/2" discharges, rear steamers, and direct tank fills, shall be shown
- Water tank outline
- Fill towers
- Generator outline
- Warning lights
- D.O.T. lights

Text Block Items

- Chassis make/model
- Fire pump make/model
- Water tank capacity
- Foam cell capacity
- Body material
- Hose bed capacity in cubic feet
- Total compartment cubic feet
- Utilize an unique bid number
- Drawings shall be printed on white paper with black ink

PURCHASER'S OBLIGATIONS

The purchaser reserves the right to accept or reject any or all bids on such basis as the purchaser deems to be in its best interest. All bidders shall be advised that the purchaser

is not bound in any manner to automatically accept the lowest bid. The purchaser shall only be obligated to purchase the lowest bid that meets these detailed specifications as closely as possible.

SAFETY REQUIREMENTS

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

ACQUAINTANCE WITH SPECIFICATIONS

It is the responsibility of the bidder to review all of the bidding requirements. Failure of a bidder to be acquainted with this information shall not relieve them from any obligations of the bid requirements.

QUALITY AND WORKMANSHIP

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

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

GENERAL CONSTRUCTION

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

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

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

LIABILITY

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

WARRANTY

A copy of the warranties for the chassis, pump, body, paint, and water tank shall be furnished with each bidder's proposal.

BID FORMS / SPECIFICATIONS

All bid forms shall be submitted on the attached bid form. The bid form and/or these specifications shall be filled out by checking either the "YES" or "NO" column for each and every section/paragraph. Failure to use this form and/or these specifications shall be cause for immediate rejection of any bid.

EXCEPTION TO SPECIFICATIONS

The following chassis, pump, and body specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that specified (as judged by the customer), and provided they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". Exception lists shall refer to the specification page number. Each check in the "NO" column shall be listed and fully explained. Where no check is made in a particular paragraph with either "YES" or "NO", it shall be assumed the bidder is taking exception to that paragraph. If a paragraph contains an empty column, where the bidder neglected to check the proper "YES" or "NO" column, it is assumed the bidder is not conforming to the requirements of this paragraph. If no explanation is given in the "EXCEPTIONS TO SPECIFICATIONS" document, the bid is subject to immediate rejection.

PROPOSALS TAKING TOTAL EXCEPTION TO THESE SPECIFICATIONS WILL BE IMMEDIATELY REJECTED.

The buyer is aware that all bidders shall have to take some exceptions therefore; **BIDDERS THAT TAKE NO EXCEPTIONS shall BE REQUIRED TO MEET EVERY PARAGRAPH TO THE FULLEST EXTENT SHOULD THEIR BID BE ACCEPTED.** It is the intent of the purchaser to receive bids that do not require telephone calls or other communications to ascertain what a bidder is intending to supply.

Upon delivery, the apparatus shall be inspected against THESE specifications and not those supplied by the bidder with their proposal. Deviations shall not be acceptable unless they were noted as exceptions at the time of bid and the apparatus shall be rejected until said deviations are corrected to the satisfaction of the buyer.

Decisions regarding equal to or better than, shall be the sole responsibility of the recipient of the bids rather than those companies submitting bids. All deviations, regardless of significance must be explained in the "EXCEPTIONS TO SPECIFICATIONS" section of the bid.

When exceptions are not taken but inconsistencies are noted in the submitted detailed specifications, the bid may be subject to rejection.

ROADABILITY

The apparatus, when fully equipped and loaded, shall be capable of the following performance while on dry paved roads that are in good condition:

- Accelerating from 0 to 35 mph within 25 seconds on a 0 percent grade
- Attaining a speed of 50 mph on 0 percent grade
- Maintaining a speed of at least 20 mph on any grade up to and including 6 percent

The maximum top speed of the apparatus shall not exceed the tire manufacturer's maximum speed rating for the tires installed on the apparatus.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the bidder within 30 days of the date of the first trials.

Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes as required to conform to any clause of the specifications within 30 days after notice is given to the bidder of such changes, shall be cause for rejection of the apparatus.

Permission to keep or store the apparatus in any building owned or occupied by the Department during the specified period, with the permission of the bidder, shall not constitute acceptance. No Exceptions

PROPOSAL SEQUENCE

Bid specifications shall be submitted in the same sequence as these specifications for ease of checking compliance. There shall be no exceptions allowed to this requirement. The apparatus committee intends to be thorough during the evaluation of bids process. In order to maximize efficiency and minimize the time it takes to thoroughly evaluate all received bids this requirement must be strictly adhered to.

AWARD OF CONTRACT

All bids submitted shall be good for a minimum of 30 days during which time bid securities submitted with the proposals shall be held by the purchaser. Criteria for the award shall include, but not be limited to, the following:

- Apparatus Performance And Safety Levels / Considerations
- Completeness of proposal
- Accuracy of accompanying data
- Past performance of bidder
- Compliance with the detailed specifications
- Compliance with purchasers request(s) for personnel qualifications or certifications
- Exceptions and clarifications
- Financial stability of bidder
- Local representation of the manufacturer
- Serviceability of the proposed apparatus
- Service capabilities of the bidder's local representative
- Compliance with NFPA 1901
- Any other factor the purchaser deems relevant

After the evaluation and award process is complete, all bidders shall be notified of the results and securities shall be returned.

NFPA 1901-2016

The National Fire Protection Association "Standard for Automotive Fire Apparatus", 2016 edition, is hereby adopted and made a part of these specifications, the same as if it were written out in full detail, with the exception of the section dealing with "Equipment Recommended for Various Types of Apparatus". Bidders shall provide the equipment requested herein and the buyer shall supply the rest before the apparatus is put into service. It is the intent of the purchaser to purchase an apparatus that meets 100% of

the minimum standards defined and outlined in NFPA 1901-2016 edition. There are to be no exceptions to this requirement.

INSPECTION CERTIFICATE - NFPA 1901 COMPLIANCE

An OEM inspection certificate for the apparatus shall be furnished upon delivery. The purpose of this NFPA 1901 compliance inspection shall be to serve as proof to the customer that all applicable standards have been met or exceeded by the responsible manufacturer.

The following objectives shall be achieved as a result (this listing shall not be construed as being all inclusive):

- Ensure that understanding of all parties respective responsibilities have been addressed by the actual referencing of NFPA 1901 and the amendments in these specifications and the purchase contract and documentation.
- Ensure that only structural materials complying with appropriate standards and codes are used for construction.
- Ensure the applicable standards of design and manufacturing have been met or exceeded.
- Ensure that safety factors have been met or exceeded where required.
- Ensure that applicable standards for testing and inspection have been met or exceeded by personnel with the appropriate qualifications, experience, and certifications.
- Ensure that where applicable components, equipment, and loose equipment carry the appropriate characteristics, classifications, and/or certifications.
- Ensure that in general and as a whole, all applicable requirements set forth in NFPA 1901, and those codes, standards, and specifications referenced by said parties are met, exceeded, and/or addressed.

CONSTRUCTION DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

1. The manufacturer's record of apparatus construction details, including the following information:

- Owners name and address
 - Apparatus manufacturer, model, and serial number
 - Chassis make, model, and serial number
 - GAWR of front and rear axles
 - Front tire size and total rated capacity in pounds or kilograms
 - Rear tire size and total rated capacity in pounds or kilograms
 - Chassis weight distribution in pounds with water and manufacturer mounted equipment (front and rear)
 - Engine make, model, serial number, rated horsepower and related speed and governed speed
 - Type of fuel and fuel tank capacity
 - Electrical system voltage and alternator output in amps
 - Battery make, model, and capacity in cold cranking amps (CCA)
 - Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
 - If applicable, the pump make, model, rated capacity in gallons or liters per minute, and serial number
 - Pump transmission make, model, serial number, and gear ratio, if unit is equipped with a pump
 - If applicable, the auxiliary pump make, model, rated capacity in gallons or liters per minute, and serial number
 - Water tank certified capacity in gallons or liters
 - On aerial apparatus, the device type, rated vertical height in feet or meters, rated horizontal reach in feet or meters, and rated capacity in pounds or kilograms
 - Paint manufacturer and paint number(s)
 - Company name and signature of responsible company representative
2. Certification of slip resistance of all stepping, standing, and walking surfaces
 3. If the apparatus has a fire pump, a copy of the following shall be provided: pump manufacturers certification of suction capability, apparatus manufacturers approval for stationary pumping applications, engine manufacturers certified brake horsepower curve showing the maximum governed speed, pump manufacturers certification of the hydrostatic test, and the certification of inspection and test for the fire pump
 4. If the apparatus has an aerial device, the certification of inspection and test for the aerial device, and all the technical information required for inspections to comply with NFPA 1914, Standard for Testing Fire Department Aerial Devices
 5. If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source
 6. If the apparatus is equipped with an air system, test results of the air quality, the SCBA fill station, and the air system installation
 7. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
 8. Written load analysis and results of the electrical system performance tests
 9. When the apparatus is equipped with a water tank, the certification of water tank capacity

OPERATION AND SERVICE DOCUMENTATION

The contractor shall supply, at the time of delivery, at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted. The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof. The contractor shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

- Manufacturers name and address
- Country of manufacturer
- Source of service and technical information
- Parts and replacement information
- Descriptions, specifications, and ratings of the chassis, pump, and aerial device
- Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator-battery power distribution circuits, and input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- Lubrication charts
- Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- Precautions related to multiple configurations of aerial devices, if applicable
- Instructions regarding the frequency and procedure for recommended maintenance
- Overall apparatus operating instructions
- Safety considerations
- Limitations of use
- Inspection procedures
- Recommended service procedures
- Troubleshooting guide
- Apparatus body, chassis, and other component manufacturers warranties
- Special data required by this standard
- Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results
- A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
- One (1) copy of the FAMA Safety Guide

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

STATEMENT OF EXCEPTIONS

The proposed apparatus as described in this specification document and all related material with the bid package shall meet or exceed all applicable sections for the category of apparatus as defined by NFPA 1901 unless specifically noted within this specification or other official documents associated with this bid.

Should any area, section or portion of the apparatus not meet the intent and applicable requirements, a clearly defined listing or explanation of what and why compliance was not achieved shall be provided to the purchaser at the time of delivery.

OWNER'S MANUAL

An owner's manual containing the construction, operation, and service documentation shall be provided on a USB Drive. One (1) copy of the USB shall be provided with the apparatus.

ELECTRICAL MANUAL

A complete electrical manual for the apparatus shall also be provided on the USB Drive. This manual shall be specifically prepared for this individual unit rather than a generic schematic manual designed to accommodate all apparatus. The electrical manual shall also include electrical schematics, harness layouts, V-Mux specifications (including Node Input/output Spreadsheet and Node Relationship Spreadsheet), and Master Wire Listing. A contact letter shall also be provided by the electrical engineer, who built the manual, with instructions on using the manual and contact information for assistance with electrical manual questions.

ELECTRICAL SCHEMATICS

A section of the electrical manual shall include schematics of the electrical system and components on the apparatus. These schematics shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

PUMP PLUMBING SCHEMATICS (if applicable)

A section of the electrical manual shall include a schematic of the pump plumbing. This schematic shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

HYDRAULIC SCHEMATICS (if applicable)

A section of the electrical manual shall include schematics of the hydraulic components on the apparatus including but not limited to:

- Ladder Rack(s) and Hose Bed Door(s) (if applicable)
- Aerial – Retraction/Extension (if applicable)
- Aerial – Rotation (if applicable)
- Tiller – HVAC Hydraulics System (if applicable)

FIRE APPARATUS SAFETY GUIDE

One (1) printed copy of the FAMA Fire Apparatus Safety Guide shall be provided with the apparatus. This guide provides safety instructions for operations of the fire apparatus.

MISCELLANEOUS EQUIPMENT ALLOWANCE

The Gross Axle Weight Rating (GAWR) and the Gross Combined Weight Rating (GCWR) or Gross Vehicle Weight Rating (GVWR) of the chassis shall be adequate to carry the weight of the unequipped apparatus with the water tank and other tanks full, specified hose load, unequipped personnel weight, ground ladders, and miscellaneous equipment allowance of 2,000 pounds.

TILT TABLE TESTING NOT REQUIRED

A similar apparatus has previously passed the NFPA requirement of maintaining a

stability of 26.5 degrees in both directions.

VEHICLE STABILITY

The apparatus shall comply in accordance with NFPA 1901, current edition requirements as it applies to vehicle stability. The particular apparatus as described in the specification provided within the bid package shall be classified into one of the following categories:

- The apparatus shall go through actual tilt table testing which shall be determined by the apparatus manufacturer.
- The apparatus shall be equipped with a rollover stability control system as defined in section 4.13.1.2 of NFPA 1901.
- The apparatus shall be deemed a similar apparatus and meeting the intent of section 4.13.1.1.2 of NFPA 1901.

INDEPENDENT THIRD PARTY PUMP CERTIFICATION

The fire pump shall be tested and certified by Underwriter's Laboratories, a nationally recognized independent third party testing company. Tests shall be conducted so that the pump performs as listed below:

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

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined in accordance with NFPA 1901, current edition. The pump shall be free from objectionable pulsation and vibration.

PUMP CERTIFICATION

The pump shall be certified in U.S. gallons per minute (GPM).

ONLINE CUSTOMER INTERACTION

Smeal Holding LLC. shall provide the capability for online access.

The fire department shall be able to view digital photos of their apparatus in the specified phases of construction.

The following phases will be captured and displayed:

- Chassis arrival to the OEM
- Fabrication
- Pump and Plumbing
- Paint
- Assembly
- Completion of production

The photos shall be uploaded to a secure website, only accessible to the customer and representatives of the OEM.

PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be held at a location agreed upon between department officials and the dealership. The pre-construction meeting is the most important meeting during the after-sale production process. The purpose of this meeting is to finalize all aspects of the specifications, discuss and clarify all design details of the apparatus and to share or provide all information so all parties are in agreement on the apparatus being constructed. The ultimate goal of the pre-construction meeting is for the purchaser and dealer representative(s) to discuss and clarify all aspects of the proposed apparatus and to provide all necessary information to the apparatus manufacturer that shall ensure the apparatus is built to the satisfaction of all parties involved.

The apparatus manufacturer shall create and forward to the dealer a "Pre-construction" document containing the following items:

- Complete specifications of the apparatus including the chassis
- Detailed amp draw report
- Listing of clarifications or questions from the manufacturer that require attention (shelf locations, lettering details, etc.)
- A total of six (6) packets of 11" x 17" drawings, each packet complete with a single view drawing for each side of the apparatus shall be supplied
- All drawings shall be drawn and printed to an appropriate scale to maximize the size of the apparatus on each 11" x 17" sheet of paper.

During this pre-construction meeting, any changes or clarifications must be documented on a manufacturer issued change order. The change order shall be signed by the customer and dealership and ultimately by the apparatus manufacturer. The change order becomes an extension of the contract with the official signatures of all three parties. All change order items resulting from the pre-construction meeting shall be implemented into the official shop order document.

FINAL INSPECTION

The department/dealer representative will inspect the final apparatus prior to it leaving the apparatus body manufacturer's facility. This will allow any changes that may be required, to be done so in a timely manner. After leaving the facility, all repairs or alterations will be performed by either the dealer or an OEM-approved service center.

MAXIMUM OVERALL HEIGHT

The overall height of the apparatus shall not exceed 118" (9'-10") from the ground. This measurement shall be taken with the tires properly inflated and with the apparatus in the unloaded condition to ensure a maximum overall height. In order to provide the maximum overall height, proposed units using calculated weight as a means to achieve a lower overall height shall not be accepted. The measurement shall be taken at the highest point of the apparatus.

MAXIMUM OVERALL LENGTH

The overall length of the apparatus shall not exceed 404" (33'-8").

WHEELBASE

The wheelbase of the apparatus shall not exceed 204".

ANGLE OF APPROACH

The angle of approach of the apparatus shall be a minimum of 12 degrees.

ANGLE OF DEPARTURE

The angle of departure of the apparatus shall be a minimum of 10 degrees.

SPARTAN METRO STAR CHASSIS

The chassis shall be a Spartan Metro Star.

MUD FLAPS

In addition to the chassis supplied front mud flaps, two (2) mud flaps shall be provided rearward of the rear axles on the apparatus.

The chassis supplied and installed heat exchanger shall be attached to the pump by the OEM manufacturer.

The cab tilt will remain in the chassis specified location.

12V USB DUAL PORT

A Blue Sea USB dual port shall be installed in the chassis cab. The outlet shall be battery direct and have a maximum of a 5-amp fuse provided with the power circuit.

Shop Note: Outlet shall be mounted on the engine tunnel shelf. Officer's side. Reference Picture in P drive.

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ALUMINUM MOUNTING PLATE ON ENGINE TUNNEL

A 3/16" aluminum mounting plate shall be on the top of the chassis engine tunnel for the mounting of equipment. The plate shall be mounted on 3/4" spacers and will be on the flat portion of the engine tunnel only. The mounting plate shall have an onyx MultiSpec MS90 finish.

ENGINE TUNNEL MULTI-SPEC ONYX SHELF

One (1) shelf painted with a black Zolatone Onyx finish to match the interior of the chassis cab shall be installed on the rear of the engine tunnel. The shelf shall have a mounting surface of approximately 6".

120V RECEPTACLE OUTLET BAR

One (1) 120 volt receptacle outlet bar shall be installed on the apparatus. The outlet bar

shall have six (6) 120 volt receptacles and shall be wired directly to the shoreline.

Shop Note: Under shelf

The outlet shall be located inside the chassis cab, on a shelf located on the back of the engine tunnel.

The exact location will be determined by the apparatus manufacturer, unless a specific location is clarified in the shop note.

WATER TANK

The apparatus shall be equipped with a United Plastic Fabricating (UPF) 1000 U.S. gallon water tank. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus. The water tank shall be constructed of 1/2" thick PT2E polypropylene sheet stock, a non-corrosive stress relieved thermoplastic material, black in color, and UV-stabilized for maximum protection. The tank shall be of a specific configuration and shall be designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the tank shall be fitted with removable lifting eyes designed with a 3:1 safety factor to facilitate easy removal.

TANK BAFFLES

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

TANK SUMP

One (1) sump shall be provided in the bottom of the water tank, constructed of 1/2" polypropylene, and located in the driver's side front quarter of the tank. Tanks requiring a front suction shall incorporate a 4" schedule 40 polypropylene pipe with a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. An anti-swirl plate shall be located approximately 2" above the sump.

TANK FILL CONNECTION

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

TANK LID

The tank lid shall be constructed of 1/2" thick PT2E polypropylene and incorporate a three-piece locking design allowing for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and welded to the sides and the longitudinal partitions for maximum integrity. The lid shall have hold downs consisting

of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers, ensuring the covers remain rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

WATER TANK MOUNTING

The water tank cradle shall be an integral part of the body subframe and allow the tank to rest on the subframe cross members spaced as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum Rockwell hardness of 60 durometers. The tank shall be supported around the entire perimeter and captured front and rear as well as side to side to prevent the tank from shifting during vehicle operations.

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

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

WATER TANK DRAIN

A 1-1/2" drain valve shall be provided under the sump of the water tank. The valve shall include a locking lever to prevent accidental draining of the water tank.

WATER TANK FILL TOWER

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

WATER TANK LEVEL GAUGE

One (1) Fire Research, model WLA300-A00, TankVision Pro 300 water tank level gauge shall be provided on the pump operator's control panel.

The gauge shall have nine (9) easy to see super bright RGB LEDs to show the tank volume. The display shall use a two-dimensional, two-element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall start to flash when the tank volume is at 1/4 tank or less and use down scrolling LEDs to alert the pump operator when the tank is almost empty.

6" WATER TANK OVERFLOW

The tank shall be equipped with a minimum of a 6" schedule 40 polypropylene overflow/air vent pipe installed in the fill tower extending through the tank and dumping behind the rear axle.

WATER TANK TREAD PLATE COVER

The exposed water tank ahead of the hose bed bulkhead shall be covered with tread plate to protect it from the elements.

FOAM CELL

One (1) United Plastic Fabricating (UPF) 30 U.S. gallon foam cell shall be incorporated into the water tank. One (1) pressure/vacuum vent shall be installed and one (1) drain hose shall be connected to the foam cell. The drain shall have a quarter-turn valve installed inside the pump compartment and it shall drain below the frame rail of the chassis.

The foam cell shall be designed for use with Class "B" foam.

The foam cell shall have a manual fill tower constructed of 1/2" PT3 polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The foam fill tower shall be yellow in color, indicating the type of foam to be utilized and located on the officer's side front corner of the water tank. The capacity of the cell shall be engraved on the top of the fill tower lid. The tower shall have a 1/4" thick removable polypropylene screen and a stainless steel hinged-type cover. Inside the fill tower, approximately 1.5" down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the cell. A pressure vacuum vent shall be provided in the lid of the fill tower.

FOAM CELL LEVEL GAUGE

One (1) Fire Research, model WLA370-A00, TankVision Pro 300 foam tank level gauge shall be provided on the pump operator's control panel.

The gauge shall have nine (9) super bright RGB LEDs to show the tank volume. The display shall use a two-dimensional, two-element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank. The gauge shall be self-calibrating by filling the tank at a steady flow rate. Self-diagnostics capabilities shall be standard on the gauge. The gauge shall start to flash when the tank volume is at 1/4 tank or less and use down scrolling LEDs to alert the pump operator when the tank is almost empty.

The gauge shall have a label that indicates it is for the foam cell that contains Class "B" foam.

The water tank shall be pre-engineered for future installation of a dump valve.

None

HOSE BED

The hose bed shall be located above the water tank and have a minimum capacity of 30 cubic feet in accordance with NFPA 1901, current edition. The inside of the hose bed shall be constructed of smooth aluminum. Hose shall be accessible from the rear, and the opening shall be free of obstructions that might interfere with the deployment and loading of hose. A 1" stainless steel body trim piece shall be at the rear-bottom of the hose bed, to protect the chevron striping when deploying hose.

The interior of the hose bed shall be painted the same body color as the upper portion of

the body.

The floor of the hose bed shall be constructed of Dura-Dek fiber reinforced plastic material to prevent the accumulation of water and to allow ventilation to aid in drying hose. The flooring shall be fabricated of "T" beam pultrusions in parallel connected with cross slats that are first mechanically bonded and then epoxied, forming a large sheet. The top portion of each "T" cross section shall measure 1-1/4" wide and 3/16" thick with beaded ends. The vertical portion shall be 3/8" thick, beading out at the bottom to a thickness of 1/2" and tall enough to result in an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation.

Each "T" beam shall be constructed utilizing a core of 250,000 continuous glass fiber strands that are high in resistance to tension, compression and bending. An outer sheath consisting of a continuous strand mat to prevent linear splitting and slipping shall surround the core. The sheath shall also serve to draw the protective resin to the bar surface. Both reinforcements shall be pulled through an isophthalic polyester resin, treated with antimony trioxide for fire resistance, to form a solid length.

The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. The bright white coating shall be baked on.

The hose bed area shall be adequately lit to meet requirements.

The hose bed shall contain the following hose load:

500' of 2-1/2" double jacket hose

1000' of 5" double jacket hose

POWER OPERATED HOSE BED DOORS

The hose bed storage area shall be covered with two (2) hinged aluminum doors. The doors shall be hinged on the outside edges, utilizing full-length stainless steel piano hinges. The doors shall lift up and out towards the outside of the body. The doors shall be fabricated with 14 gauge aluminum inner panel for superior strength. The outside sheet shall be constructed of anti-slip tread plate.

The hose bed doors shall be power-operated utilizing a self-contained hydraulic system. The pressure of the hydraulic system shall be factory set to a pressure that will smoothly power the doors upward and downward. The system shall be designed to keep the doors firmly open, without the requirements of mechanical safety locks, when reloading hose as well as to secure the doors firmly in the travel position.

The hydraulic cylinders shall be located in front of the hose bed and shall be designed so the doors only operate in the predetermined factory-set sequence. The system shall allow the sequenced doors to move at the same time. The cylinders, when the doors are in the closed position, shall lower into a separate compartment from the stored hose to ensure unobstructed hose deployment operations. The cylinder pins attached to the doors shall be designed to be removable with the doors in the closed position without having to climb inside the hose storage area.

Self-contained switches shall be utilized to raise and lower the cover doors independently. The switches shall be located at the rear of the apparatus in a convenient location allowing the operator to view the hose bed cover doors while operating the

mechanism from ground level. The switches shall be the momentary type that requires the operator to hold the switch until the desired movement of the cover doors is achieved.

The power unit shall be interlocked with the parking brake and shall only be operable when the parking brake is applied. The doors shall be connected to the open door warning system. An audible alarm shall be located towards the front of the hose bed area designed to warn personnel that door movement is occurring.

HOSE BED COVER LIGHTING

Hose bed lighting shall be provided by four (4) Grote, model 61E41-3, LED lights recessed in the inside of the hose bed cover doors, two (2) in each door. The lights shall be enclosed in a shock-absorbing, weather proof housing with long life LEDs for added durability. The lights shall be activated when the doors are opened.

A heavy-duty 22 oz. hypalon vinyl coated nylon restraint shall be located on the end of the hose bed. The top of the restraint shall be connected to the tread plate hose bed cover through a C-Rail channel. The bottom of the restraint shall be attached to the body utilizing hooks and bungee cord. The restraint color shall be black.

HOSE BED DIVIDER

One (1) hose bed divider, fabricated from 1/4" smooth aluminum plate and an aluminum extrusion, shall be installed in the hose bed. The divider shall have an abraded finish and shall be mounted on hot-dipped galvanized slide rails at the front and rear of the hose bed. The slide rails shall allow full movement of the divider along the width of the hose bed where no obstructions, such as fill towers, are present. The divider shall have an oval-shaped handhold slot to assist in relocating the divider.

ALUMINUM BODY CONSTRUCTION

The apparatus body shall be fabricated from 1/8" 5052-H32, smooth aluminum sheet. The total outside width of the apparatus body shall not exceed 100 inches. The width measurement of the sidewalls shall be made from the outside wall of the two opposite sides of the body. The body shall be designed for a single axle chassis.

The complete apparatus body shall be fabricated utilizing the break and bend techniques in order to form a strong, yet flexible, uni-body structure. The body shall be constructed with holding fixtures to ensure proper dimensioning. Each apparatus body is specific in design in order to meet the unique requirements of the purchasing fire department.

The main body compartments on each side, as well as the rear center compartment if applicable, shall contain a sweep out floor design. Each compartment shall be made to the most practical dimensions in order to provide maximum storage capacity for the fire department's equipment. The door opening threshold shall be positioned lower than the compartment floor permitting easy cleaning of the compartments.

Continuous, solid welded seams shall be located at the upper front and upper rear corners of the apparatus body. The flooring of all lower, main body compartmentation shall also have solid weld seams. All door jambs, on both the top and the bottom, shall be solid welded as well. Each main door jamb shall consist of a double jamb design; this is comparable to a double struck frame design, which provides superior strength and durability. All double door jams are to be welded together utilizing the plug weld

technique. All remaining compartment walls shall be stitch welded.

The compartment floors, specifically L1 and R1, shall have a minimum of two (2) 2" x 1/4" angles welded to the entire width of the compartment floor. The two (2) rear side compartments as well as the rear center compartment, if applicable, shall be welded to the rear deck support structure. This rear deck support structure is specially designed for the galvanized apparatus body substructure. A minimum of two (2) angles, which are 1/4" x 3" x 3", shall run the entire width of the body from sidewall to sidewall. Each lower, rear compartment shall be adequately stitch welded to the cross angles providing strength and durability to the entire apparatus body.

The body design shall include a "false wall" design in the lower portion of each lower, rear compartment. This "false wall" is required in order to allow for easy accessibility to the rear electrical components found in the rear tail light cluster area.

On the upper area of the apparatus body, directly above the side compartment door openings, a header is to be fabricated from smooth, aluminum sheet. This area shall be free of any body seams and shall be painted the same color as the apparatus body. The height of the header may vary depending on the following factors: apparatus design, lettering requirements, scene lights and warning light requirements as well as various other options. A "J" channel shall be incorporated into the body design in order to provide a rain gutter to further assist in preventing excessive moisture from getting into the compartments.

SIDE COMPARTMENT DOORS

ROM roll-up doors shall be installed on each side body compartment, six (6) total. Each door shall be a shutter type with slats that roll onto a spool at the top of the compartment. Each slat shall be equipped with nylon end shoes to assure operation without the need for constant lubrication. The door slats and tracks shall be wet painted by the door manufacturer to match the apparatus body.

Each ROM roll-up door shall be supplied with a full-width lift bar and finger pull handle integrated into the bottom rail for easy one hand operation.

DOOR HANDLES

The door handles on the side body compartments of the apparatus shall be non-locking style.

DRIP TRAY

One (1) drip tray shall be installed inside the upper section of the compartment containing the load center. The aluminum drip tray shall collect water that accumulates on the shutter and drips into the compartment when the door is rolled up. A drainage tube will allow the collected water to exit underneath the apparatus. The pan shall also serve to protect the shutter from damage due to impact from behind or below.

REAR COMPARTMENT DOOR

One (1) ROM roll-up door shall be installed on the T1 compartment face. The door shall be a shutter type with 34-millimeter slats that roll onto a spool at the top of the compartment. Each slat shall be equipped with nylon end shoes to assure operation without the need for constant lubrication. The roll-up door shall have a satin finish.

The ROM roll-up door shall be supplied with a full-width lift bar and finger pull handle integrated into the bottom rail for easy one hand operation.

Shop Note: The T1 door will be pre wired for interlock for future install of dump chute.

BODY COMPARTMENT LIGHTING

A total of fourteen (14) On-Scene Access Series LED compartment lights shall be installed in the body compartments. Each light shall be enclosed within a tough waterproof Lexan tube enclosure and offer 400 lumens per 18" of light and an adjustable beam angle. The lights shall have a five (5) year replacement warranty.

COMPARTMENT COATING

The interior of the body compartments shall be coated with gray Line-X unless otherwise specified. The coating shall be durable enough to withstand the everyday wear and tear of equipment removal and shifting.

TURTLE TILES

Turtle Tile Plastics interlocking squares shall be provided in all of the body compartments. The Turtle Tiles shall be applied in all body compartment shelves and adjustable-height trays. For maximum slip resistance and drainage each square shall have a grid surface design.

COMPARTMENT AIR RELEASE

Each compartment shall be vented to help remove trapped air when closing the compartment door. The vent shall be a rubber gasket in the area of the outboard corners of the compartment. Wiring may also be run through these areas.

COMPARTMENT DRAIN HOLES

Each body compartment shall be equipped with drain holes to allow standing water to exit underneath the apparatus.

FUEL FILL

A fuel fill pocket shall be located in the driver's side rear wheel well area. The fuel fill shall utilize a stainless steel OEM door with a polished finish. The hinge and frame shall all be constructed out of stainless steel material.

STANDARD WHEEL WELL STORAGE

The wheel well area of the apparatus shall be designed to additional components.

DRIVER'S (LEFT) SIDE BODY COMPARTMENTS

COMPARTMENT L1

A full height compartment shall be located ahead of the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L1 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 58"
- Width: 41"
- Depth: 26" Upper and 26" Lower
- Intermediate Divide Height: 0"

COMPARTMENT L2

A standard height compartment shall be located above the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L2 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 26"
- Width: 65"
- Depth: 26" Upper and 0" Lower
- Intermediate Divide Height: 0"

COMPARTMENT L3

A full height compartment shall be located behind the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L3 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 58"
- Width: 41"
- Depth: 26" Upper and 26" Lower
- Intermediate Divide Height: 0"

L1 Components

ADJUSTABLE SHELVES

Two (2) aluminum adjustable full-depth shelves shall be installed in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with a minimum of 2" lips. The shelves shall have an abraded finish and shall be designed in such a manner as to allow liquids to readily drain.

TOOL BOARD

One (1) full height slide out aluminum tool board shall be located in the full depth compartment. The tool board shall utilize a locking roller assembly to lock it in both the opened and closed position. The tool board shall be mounted to a horizontal strut to allow the board to be relocated for the best fit in the compartment.

The tool board shall have a maintenance-free abraded finish and be of a pegboard pattern design.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts

shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

VERTICAL PARTITION

One (1) bolt-in vertical partition shall be installed in the full height compartment. The partition finish shall match the compartment interior.

Shop Note: Shall be located in same location as S4566 Demo.

L2 Components

ADJUSTABLE SHELF

One (1) aluminum adjustable full-depth shelf shall be installed in the compartment. The shelf shall be constructed of 3/16" aluminum sheet with a minimum of 2" lips. The shelf shall have an abraded finish and shall be designed in such a manner as to allow liquids to readily drain.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

L3 Components

ADJUSTABLE SHELVES

Two (2) aluminum adjustable full-depth shelves shall be installed in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with a minimum of 2" lips. The shelves shall have an abraded finish and shall be designed in such a manner as to allow liquids to readily drain.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

DRIVER'S SIDE REAR WHEEL WELL POSITION - WL1

A three (3) air bottle compartment shall be installed in the forward portion of the rear wheel well area, on the driver's side. The compartment shall be a triangle design. The compartment door, flange, and hinges shall be constructed of stainless steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The storage compartment shall be a molded component that is assembled to the door and flange. The door shall have a polished stainless steel finish.

OFFICER'S (RIGHT) SIDE BODY COMPARTMENTS

COMPARTMENT R1

A full height compartment shall be located ahead of the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R1 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 58"
- Width: 41"
- Depth: 26" Upper and 26" Lower
- Intermediate Divide Height: 0"

COMPARTMENT R2

A standard height compartment shall be located above the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R2 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 26"
- Width: 39"
- Depth: 26" Upper and 0" Lower
- Intermediate Divide Height: 0"

COMPARTMENT R3

A full height compartment shall be located behind the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R3 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 58"
- Width: 41"
- Depth: 26" Upper and 26" Lower
- Intermediate Divide Height: 0"

R1 Components

ADJUSTABLE SHELVES

Two (2) aluminum adjustable full-depth shelves shall be installed in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with a minimum of 2" lips. The shelves shall have an abraded finish and shall be designed in such a manner as to allow liquids to readily drain.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

R2 Components

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

R3 Components

ADJUSTABLE SHELF

One (1) aluminum adjustable full-depth shelf shall be installed in the compartment. The shelf shall be constructed of 3/16" aluminum sheet with a minimum of 2" lips. The shelf shall have an abraded finish and shall be designed in such a manner as to allow liquids to readily drain.

FLOOR MOUNTED ROLL OUT TRAY

One (1) roll out equipment tray shall be installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips. The tray shall have an abraded finish and shall be equipped with a locking slide in order to hold the tray in either a fully extended or closed position. The tray shall be equipped with the Austin Hardware front drawer release system which allows for one handed operation of the system.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

OFFICER'S SIDE REAR WHEEL WELL POSITION - WR1

A three (3) air bottle compartment shall be installed in the forward portion of the rear wheel well area, on the officer's side. The compartment shall be a triangle design. The compartment door, flange, and hinges shall be constructed of stainless steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The storage compartment shall be a molded component that is assembled to the door and flange. The door shall have a polished stainless steel finish.

OFFICER'S SIDE REAR WHEEL WELL POSITION - WR3

A speedy dry dispenser shall be installed in the rearward portion of the rear wheel well area, on the officer's side. The compartment shall be a triangle design. The dispenser shall be able to slide out for use. The dispenser shall have an open top for refilling and dispense through the bottom. The dispenser shall be fabricated from aluminum.

The compartment door, flange, and hinges shall be constructed of stainless steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The storage compartment shall be a molded component that is assembled to the door and flange. The door shall have a polished stainless steel finish.

OFFICER'S SIDE HYDRAULIC EQUIPMENT RACK

A hydraulic equipment rack shall be above the high compartments on the officer's side of the apparatus. The equipment rack shall be operated hydraulically, lowering equipment firmly to shoulder height for easy removal and reloading. The equipment rack shall be painted the same color as the apparatus.

The equipment rack shall be modular in design and built in a "T" shape, pivoting on a 20-inch wide arm. The module shall be located between the high side compartments. No guide arms or stabilizer arms shall be located on the ends of the rack. The officer's side compartments shall be accessible when the equipment rack is in either the up or down position.

When in the up position, the lifting mechanism shall be fully retracted into the apparatus body and shall be flush with the side of the apparatus. Pilot operated check valves shall be installed in the hydraulic system to lock the rack in the stored position by maintaining pressure on the hydraulic cylinder.

A master shut off switch and a flashing indicator light shall be on the chassis dash to warn the driver when the equipment rack is in the down position or in motion when the chassis parking brake is disengaged. The warning light shall be operative regardless of the position of the master switch.

Reflective striping shall be applied to the equipment rack assembly in a manner that will readily indicate a hazard or obstruction to personnel. In addition to the reflective striping, Whelen TIR3 series LED lights shall be affixed to the front and rear of the equipment rack. These lights shall automatically become energized anytime the equipment rack is not fully bedded.

EQUIPMENT RACK ATTACHMENT - GROUND LADDER/PIKE POLE STORAGE

Ground ladders shall be stored on the officer's side hydraulic equipment rack with brackets that provide a quick method of removing and reloading the ladders. A quick release shall allow personnel to loosen and unhook the retaining strap in order to remove the ladders, a ratchet style mechanism shall securely and easily fasten the ladders back into place. The bracket shall allow a sectional ladder to still be clamped into position when the roof ladder has been removed.

Provisions for pike poles to be stored on the equipment rack shall be provided.

A cover shall be installed on the hydraulic equipment rack. The cover shall protect the lifting mechanism of the equipment rack when in the up and stored position. The cover shall be painted to match the body color.

The control switch for the hydraulic equipment rack shall be located on the pump panel to allow viewing the equipment rack when operating. The control shall be wired to the parking brake and shall only be operable when the parking brake is applied.

Shop Note: Switch shall be located on the officer's side pump panel.

EQUIPMENT RACK AUDIBLE ALARM

An Ecco, model 512, audible alarm shall be installed on the apparatus to indicate when the hydraulic equipment rack is in motion. A control switch located on the apparatus body shall activate the alarm.

REAR SIDE BODY COMPARTMENTS

COMPARTMENT T1

A full height compartment shall be located at the rear of the apparatus body. This compartment shall be designated as T1 within these specifications and any ensuing

paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

- Height: 34"
- Width: 43"
- Depth: 19"

T1 Components

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 500 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

COMPARTMENT STRUTS

Aluminum vertical strut channels shall be welded in the compartment. Two (2) struts shall be provided for any full depth portion and one (1) strut shall be provided for any shallow depth portion.

GS-36 BODY SUB FRAME

To assure proper body alignment and clearance, the body sub frame shall be constructed in a jig and fitted directly on the chassis. The sub frame shall be constructed of 36,000 PSI galvanized steel.

The chassis frame rails shall be fitted with fiber reinforced rubber to isolate the body frame members from direct contact with chassis frame rails.

The main body sub frame shall be constructed from steel tubing. The sub frame shall run the full length of the body and shall be spaced the same width as the chassis frame rails. The main sub frame shall also be the integral support for the water tank. Vertical drop tubes shall be welded to the sub frame. From these vertical drop tubes shall extend cross members constructed of steel angle. These cross members shall extend out to support the compartments. Cross members shall be located at the front and rear of the body and in front and rear of the wheel well opening.

A drop frame, fabricated of steel tube and steel angles, shall support the compartment area behind the rear. The rear drop frame shall be constructed using vertical drop tubes, welded to the main sub frame. All drop frame structures shall be welded directly to the body sub frame to allow the body to be a completely separate structure from the chassis.

After fabrication the sub frame shall be hot dip galvanized for maximum protection against corrosion.

BODY MOUNTING

The body sub frame shall be fastened to the chassis frame with a minimum of two (2) spring loaded body mounts. Each mount shall be configured using a two-piece bracket.

The two (2) brackets shall be fabricated of steel plates. The plates shall be galvanized to prevent any corrosion. Each mounting assembly shall utilize two (2) plated bolts and a heavy duty spring. The assembly design shall allow the body and sub frame to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall limit any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement shall not be acceptable.

TANK MOUNTING

The water tank shall rest on the sub frame cross members which are spaced as required by the tank manufacturer.

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

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

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

DRIVER'S SIDE HATCH COMPARTMENTS

A hatch compartment shall be located on top of the driver's side compartments. The compartment shall be constructed as an integral part of the apparatus body. The compartment shall open from end-to-end, creating one large compartment, free of any dividing bulkheads.

Two (2) independent tread plate doors shall be covering the compartment. Each compartment door handle shall be non-locking stainless steel recessed "D" ring type handle. A safety latch with striker plate shall be included with each door handle assembly. Gas props shall be utilized to aid in opening and to hold the door in the open position.

Lighting shall be provided by two (2) 36" LED On Scene Access Series lights installed on the upper inside portion of the compartments, one (1) per door. The lighting shall be enclosed within a tough waterproof Lexan tube enclosure. Night Axe lights shall offer 400 lumens per 18 inches of light and an adjustable beam angle. The lights shall activate when the door is opened.

Shop Note: H1/H2 18W X 64L X 15D

The entire driver's side hatch compartment shall utilize Turtle Tile Plastics interlocking squares. For maximum slip resistance and drainage, each square shall have a grid surface design.

WALKWAYS AND OVERLAYS

All exterior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be overlaid with 3003 H22 bright tread plate to provide a slip resistant surface, even when the surface is wet. All interior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be slip resistant when the surface is dry. The degree of slip resistance shall be in accordance with NFPA 1901, current edition.

Horizontal walkways shall have .080" aluminum tread plate overlays installed and vertical surfaces shall have .125" aluminum tread plate overlays. Overlays shall be installed that are totally insulated from the apparatus with nylon shoulder washers that extend into holes in the body. Stainless steel cap nuts shall be employed where bolt ends may damage equipment or cause injury. After the apparatus is painted and the overlays are reinstalled, they shall be additionally sealed at the edges with a caulking compound. The exterior top tread plate overlay shall be mounted flush with the outer edges of the apparatus body.

Any designated horizontal standing or walking surface higher than 48" from the ground and not guarded by a railing, or structure at least 12" high shall have a "safety yellow line" marking the outside perimeter of the designated standing or walking surface area. Yellow reflective SCENE dots shall be used to create the line along the outside edges of standing and walking surfaces. Steps and ladders shall not be required to have the yellow line.

STEPPING SURFACES

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

REAR DECK

A modular bolt-on deck shall be installed on the rear of the apparatus to form a full width step area. The rear deck shall be constructed of anti-slip bright tread plate. The outside edge of the rear deck shall be flush with the rub rail that is installed on the body to maintain a uniform appearance. The depth of the rear deck shall be 13.25". The rear deck shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

STEPPING AREA

An upper rear stepping area on the driver's side shall be rearward of the hatch compartments. The stepping area shall be approximately 24" deep and approximately 20" wide.

BODY RUB RAILS

Rub rails shall be installed beneath the compartment doors to protect the apparatus body from damage should the body be brushed or rubbed against another object. The rub rails shall be 2-1/2" x 1" 3/16" aluminum channel. The rub rails shall be highly polished and then bright dip anodized.

The rub rails shall be installed on the body utilizing non-corrosive nylon spacers and

secured with stainless steel bolts. The outside edge of the rub rails shall be even with the fenderettes and bolt-on steps to prevent snagging.

REAR UNDERBODY TOW EYE

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

REAR WHEEL WELLS

The fenders shall be integral with the body sides and compartments with a seamless appearance. The fenders shall be fitted with bolt-in removable full circular inner liners in the wheel well area for ease of cleaning and maintenance. The liners shall match the material used to build the body. A sufficient clearance shall be provided in the wheel well to allow the use of tire chains when the apparatus fully loaded.

STAINLESS STEEL FENDERETTES

Two (2) stainless steel fenderettes shall be installed at the outboard edge of the rear wheel well area, one (1) on each side. The fenderettes shall be bolted to the apparatus body using nylon washers to space them slightly away from the body to reduce the build-up of road grime. The fenderettes shall be constructed of stainless steel that has been polished to a high-quality finish.

EXHAUST HEAT DEFLECTOR SHIELD

A 4" heat deflector shield shall be installed over the exhaust to aid in dissipating the heat to prevent exhaust heat from adversely affecting contents stored in the body.

FUEL TANK GAUGE ACCESS PANEL

A removable panel shall be provided in the rear compartment to allow for access to the fuel tank gauge without removing the fuel tank.

LICENSE PLATE BRACKET

A license plate bracket shall be mounted on the rear of the apparatus. A clear LED light shall be incorporated into the bracket.

TRIMRITE STAINLESS STEEL FASTENERS

TrimRite stainless steel fasteners shall be provided for all exposed and unpainted fasteners throughout the body in locations such as overlays, pump panels, and other numerous hardware mounting locations. TrimRite stainless is a hardenable martensitic stainless steel that provides a high level of corrosion resistance, hardness up to Rockwell C 51, good cold formability and ease of heat treatment, all of which combine to provide an alloy which has been used for many applications. TrimRite stainless is tested to salt spray standard ASTM B117, which is a 200-hour salt spray test. The OEM shall use TrimRite stainless with an added blue patch which provides improved vibration resistance for the fasteners.

FRONT TREAD PLATE OVERLAYS

A tread plate overlay shall be located on the front vertical areas of each side of the apparatus body. The overlays shall be located on the front of the body compartments.

FRONT BODY STEPS AND LIGHTING

Four (4) Cast Products folding steps shall be located on the front of the driver's side body compartments. The folding steps shall have two large open slots to prevent the buildup of ice or mud and to provide a hand-hold when necessary. The steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of 500 pounds.

The steps shall be adequately lit with LED lighting. One (1) light shall be located above the steps.

FRONT BODY STEPS AND LIGHTING

Four (4) Cast Products folding steps shall be located on the front of the officer's side body compartments. The folding steps shall have two large open slots to prevent the buildup of ice or mud and to provide a hand-hold when necessary. The steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of 500 pounds.

The steps shall be adequately lit with LED lighting. One (1) light shall be located above the steps.

REAR STEPS

Seven (7) Cast Products bolt-on steps shall be installed on the rear of the apparatus. Each step shall have large open slots to prevent the buildup of ice or mud and to provide a handhold when necessary. Four (4) bolt-on steps shall be on the driver's side rear of the apparatus and three (3) bolt-on steps shall be on the officer's side rear of the apparatus. The steps shall be adequately lit with LED lighting. One (1) light shall be located above each set of steps on the rear face of the body, for a total of two (2) lights. Each light shall be located in a manner that shall light all of the steps on its respective side.

REAR STEP

There shall be a grip strut step located below the hose bed on the rear of the apparatus.

BACKLIT HANDRAILS

All handrails, unless otherwise stated, shall be constructed of knurled aluminum with white colored LED backlighting. All railing shields and brackets shall be chrome plated and shall be bolted to the body with stainless steel bolts. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point.

The following handrails shall be provided on the apparatus:

A handrail shall be installed forward on the top of the body, on the driver's side.

A handrail shall be installed on the top officer's side front of the body.

Two (2) vertical handrails shall be installed on the rear of the apparatus, one (1) on the driver's side and one (1) on the officer's side.

There shall be a handrail installed rearward on the top of the body, Driver's side for the rear landing area. The handrail will be parallel to the side of body.

GROUND LADDER STORAGE

The ground ladders shall be stored on the officer's side hydraulic equipment rack with brackets that provide a quick method of removing and reloading the ladders. A quick release shall allow personnel to loosen and unhook the retaining strap in order to remove the ladders; a ratchet style mechanism shall securely and easily fasten the ladders back into place. The bracket shall allow a sectional ladder to still be clamped into position when the roof ladder has been removed.

The following ground ladders shall be supplied with the apparatus:

One (1) Duo-Safety, model 900-A, 24' aluminum two-section extension ladder shall be provided.

One (1) Duo-Safety, model 775-A, 14' aluminum roof ladder with folding roof hooks shall be provided.

One (1) Duo-Safety, model 585-A, 10' aluminum folding ladder shall be provided.

PIKE POLE STORAGE

Three (3) aluminum tubes for the storage of pike poles shall be installed on the officer's side hydraulic equipment rack.

The following pike poles shall be supplied with this location on the apparatus:

HARD SUCTION HOSE STORAGE

One (1) hard suction enclosed hose tray shall be located inside the body, behind the officer's side header, with the capacity to store one (1) 10' section of hard suction hose. Access to the hard suction hose shall be from the rear of the apparatus through a hinged painted aluminum door.

HARD SUCTION HOSE

One (1) Firequip Maxi-Flex PVC 6" x 10' section of hard suction hose shall be provided. The hose shall terminate with a long handle female and a rocker lug male connection.

HARD SUCTION HOSE STORAGE

One (1) hard suction enclosed hose tray shall be located inside the body, behind the driver's side header, with the capacity to store one (1) 10' section of hard suction hose. Access to the hard suction hose shall be from the rear of the apparatus through a hinged painted aluminum door.

HARD SUCTION HOSE

One (1) Firequip Maxi-Flex PVC 6" x 10' section of hard suction hose shall be provided. The hose shall terminate with a long handle female and a rocker lug male connection.

WHEEL CHOCK STORAGE

The wheel chocks shall be stored in locations that are easily accessible under the front of the body on the driver's side of the apparatus.

WHEEL CHOCKS

One (1) pair of Cast Products, model TMC1008-4, wheel chocks shall be provided with the apparatus. The wheel chocks shall be mounted in Cast Products, model TMC 1010, mounting brackets.

INDEPENDENT ALUMINUM SIDE MOUNT PUMP MODULE

The pump module shall be a side mount design and fabricated from 1/8" 5052-H32 smooth aluminum sheet. The module shall be fabricated as an individual unit independent from the body. The module shall be fabricated utilizing the break and bend technique in order to form a strong yet flexible structure. The pump module shall be fabricated using precision holding fixtures to ensure proper dimensions and all attachment points shall be heavily reinforced.

PUMP COMPARTMENT LIGHTS

Two (2) 9" On-Scene Night Axe LED lights shall be installed in the pump compartment. The lights shall be rated at 100,000 hours of service. The lights shall be waterproof and magnesium chloride resistant. The lights shall be enclosed in tough 5/8" Lexan tube.

DRIVER'S SIDE RUNNING BOARD

A modular bolt-on running board, constructed of anti-slip tread plate, shall be installed on the driver's side of the pump module. The outside edge of the running board shall be flush with the rub rail installed on the body to maintain a uniform appearance. The running board shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

OFFICER'S SIDE RUNNING BOARD

A modular bolt-on running board, constructed of anti-slip tread plate, shall be installed on the officer's side of the pump module. A floating storage well compartment shall be recessed in the running board. The outside edge of the running board shall be flush with the rub rail installed on the body to maintain a uniform appearance. The running board shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

Two (2) PAC, model 1006, straps shall be provided and installed over the top of the compartment.

The floor of the storage well shall be covered with Turtle Tile flooring.

TREAD PLATE DUNNAGE COMPARTMENT

A dunnage compartment shall be located above the pump module. The dunnage compartment floor shall be constructed of tread plate.

FRONT PUMP ACCESS PANEL

A tread plate access panel shall be provided on the front of the pump compartment. The panel shall be of the single pan design and shall be positively latched in the closed position utilizing compression latches. An aluminum sill protector shall be installed on the bottom of the door opening to protect the paint from chipping and scratching. This area shall be accessible when the cab is tilted.

OFFICER'S SIDE PUMP ACCESS PANEL

A painted aluminum access panel shall be above the officer's side pump panel to allow access to the pump compartment. The vertically hinged panel shall be of the single pan design and shall be positively latched in the closed position utilizing compression latches. A gas strut shall be provided on the door. An aluminum sill protector shall be installed on the bottom of the door opening to protect the paint from chipping and scratching. The door shall be wired into the door-ajar warning light circuit.

CONTROL PANEL

The driver's side of the pump enclosure shall be divided into two sections. The lower section shall be where all valve controls, the primer control, the discharge relief valve controls (pilot valve), and other mechanical controls are located. This surface shall be referred to as the "control panel".

All valve controls shall be the self-locking type, activated by either direct control or with a direct linkage utilizing friction locking bell cranks and universal ball swivels. The primary valve handles shall have color coded tags installed in a recessed area to clearly denote the purpose of each control.

INSTRUMENT PANEL

The surface up above the control panel shall contain all instruments, gauges, test fittings, and optional controls. This surface shall be referred to as the "instrument panel". The instrument panel shall be independent and hinged and latched so that it may be opened. All instruments, gauges, and other equipment shall be installed with sufficient slack in any cabling, tubing, or plumbing to allow the panel to swivel to the fully open position.

The instrument and gauge panel shall be vertically hinged "swing out" to provide access for service.

OFFICER'S SIDE PUMP PANEL

A single panel shall be installed on the officer's side of the pump enclosure. This shall be the area where any officer's side discharges, inlets, steamers, and other pump-associated equipment are located. This panel shall be easily removable and held in place with quick release push latches. It shall be fully removable for pump and plumbing access without the need to use hand tools. Any electrical equipment that may be installed shall be equipped with connectors so they may be easily separated from the opening created when the below described front access panel is removed.

PANEL SURFACES

The control panel, instrument panel, and officer's side pump panel shall be coated with

black Line-X for maximum resistance to abrasion and to minimize glare. The material shall be capable of withstanding the effects of extreme temperatures and weather.

GARNISH RING BEZEL ASSEMBLIES

Innovative Controls intake and/or discharge garnish rings shall be installed to the apparatus with mounting bolts. These bezel assemblies shall be used to identify intake and/or discharge ports with color and verbiage. The garnish rings shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies shall feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

VERBIAGE TAG BEZEL ASSEMBLIES

Innovative Controls verbiage tag bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The verbiage tag bezel assemblies shall include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. These UV resistant polycarbonate verbiage and color inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

SAFETY MESSAGE BEZEL ASSEMBLIES

Innovative Controls safety message bezels shall be installed. The bezel assemblies will be used to identify, instruct, or warn the operators. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The safety message bezel assemblies shall include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring ANSI safety standard graphics or custom graphics. These UV resistant polycarbonate graphic inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the graphic insert labels and bezel shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

PUMP PANEL LIGHTING

The pump operator's control panel and the officer's side pump panel shall each be illuminated by Grote LED Radius lighting. The pump panel lights shall become energized upon setting the parking brake activation so the gauge information provided may be consulted. A stainless steel shield shall be installed over each pump panel light to further protect them from the elements and to act as a reflector for additional illumination.

The pump panel lighting shall become energized automatically upon setting the park brake so the gauge information may be consulted at any time the apparatus is parked.

MIDSHIP MOUNT FIRE PUMP

The pump shall be a Waterous CSUC20 2000 U.S. GPM fire pump. The pump shall be a single stage centrifugal class "A" rated fire pump, designed specifically for the fire service.

The pump body shall be cast as two (2) horizontally split pieces. The body shall be made of high tensile, close-grained gray iron with a minimum tensile strength of 40,000 PSI.

FLAME PLATED IMPELLER HUBS

The pump impellers shall be bronze, specifically designed for the fire service and accurately balanced for vibration free running. The stripping edges shall be located on opposite sides of the impellers to reduce shaft deflection.

The impeller shaft shall be stainless steel, accurately ground to size and supported at each end by oil or grease lubricated anti-friction ball bearings for rigid, precise support. The bearings used on the impeller shaft shall be automotive type bearings, easily cross-referenced and readily available at normal parts or bearing stores.

The impeller hubs shall be flame plated with tungsten carbide to hardness approximately twice that of tool steel to assure maximum pump life and efficiency. During the flame plating process, the base metal shall not be allowed to exceed a temperature of 300 degrees Fahrenheit to prevent altering the metallurgical properties of the impeller material.

IMPELLER WEAR RINGS

The pump shall be equipped with replaceable bronze wear rings for increased pump life and minimum maintenance cost. The wear rings shall be designed to fit into a groove in the face of the impeller hubs forming a labyrinth that, as the clearance increases with age, directs water from the discharge side in several directions eventually exiting outward, away from the eye of the impeller hub.

LUBRICATION SYSTEM

An internal lubrication system shall deliver lubricant directly to the drive chain. This unique design shall eliminate the need for an external lubrication pump and auxiliary cooling. Oil shall be supplied with the lubrication system.

PUMP TRANSMISSION

The pump shall have a Waterous model C20 series transmission. The housing of the transmission shall be constructed of high strength, three-piece, horizontally split aluminum. The drive line shafts shall be made from alloy steel forgings, hardened and ground to a size 2.350 inch 46 tooth involute spline. The drive and driven sprockets shall be made of steel and shall be hardened and have ground bores. The drive chain shall be a Morse HV high strength involute form chain. Bearings shall be deep-groove, anti-friction ball bearings and shall give support and proper alignment with the impeller shaft assembly. Bearings shall be oil splash lubricated, completely separated from the water being pumped, and protected by a V-ring and oil seal. An internal lubrication system shall deliver lubricant directly to the drive chain. This unique design eliminates the need for an external lubrication pump and auxiliary cooling. The pump and transmission shall be

easily separable. A two-piece shaft shall be splined allowing for individual repair of either the pump or transmission, to keep down time to a minimum. All drive line components shall have a torque rating equal to or greater than the final net engine torque.

PUMP PACKING

The stuffing boxes shall be equipped with Waterous Grafoil two-piece adjustable packing glands.

ZINC ANODES

Four (4) Waterous zinc anodes shall be provided with the fire pump. The anodes shall aid in preventing galvanic corrosion within the water pump and be easily replaceable. The anodes shall be installed as follows:

- Two (2) on the intake side of the pump
- Two (2) in the discharge manifold of the fire pump.

The pump shall be rated at 2000 gallons per minute.

FIRE PUMP MOUNTING

The fire pump shall be mounted within a separate body module that is not directly connected to the apparatus body.

The pump shall be frame mounted; therefore minimizing the likelihood of the pump casing cracking should the apparatus be involved in a collision.

The pump module shall be mounted to the frame in a minimum of four (4) locations and shall be reinforced appropriately in order to carry the expected load for the life of the apparatus.

PUMP SHIFT

The pump shift shall be supplied and installed by the chassis manufacturer.

The pump system shift indicator lights in the chassis cab shall be supplied and installed by the chassis manufacturer.

The pump system shift indicator lights on the operator's panel shall be incorporated with the pump pressure governor.

PRESSURE GOVERNOR

A Fire Research Pump Boss 400 pressure governor and monitoring display system shall be installed. The system shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 1/2" deep. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red control module. Inputs for monitored information shall be a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring. Inputs to the control module from the pump discharge and intake pressure sensors shall be electrical.

The following continuous displays shall be provided:

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

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

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. The kit shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only)

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

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

An interlock system shall be provided to prevent advancement of the engine speed at the pump operator's panel unless the apparatus has "Throttle Ready" indication.

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

INTAKE RELIEF VALVE

A Task Force Tips, model #A1850, pressure relief valve shall be installed on the suction side of the pump. The valve shall be factory preset and shall have an easy to read adjustment range from 90 to 300 PSI with easy to read 90, 125, 150, 200, 250, 300 PSI

settings and an "OFF" position. Pressure adjustment can be made utilizing a 1/4" hex key, 9/16" socket or 14mm socket. For corrosion resistance the cast aluminum valve shall be hard coat anodized with a powder coat interior and exterior finish. The valve shall have a 2-1/2" male Victaulic discharge outlet. The valve shall be in accordance with NFPA 1901, current edition requirements for pump inlet relief valves. The unit shall be covered by a five-year warranty.

TRIDENT PRIMING PUMP

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

MASTER DRAIN VALVE

A Trident manifold drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by turning a single control. The valve assembly shall consist of a stainless steel plate and shaft in a bronze body with multiple ports. The drain valve control shall be mounted on the driver's side pump panel and labeled "Master Drain".

PUMP PRIMED BLACK BY PUMP MANUFACTURER

The pump shall be primed black by the pump manufacturer.

The main intake(s) shall be unpainted and any auxiliary intake(s) shall be the same color as they arrived from the valve manufacturer.

PUMP AND ENGINE COOLING SYSTEM

A pump and engine cooling system shall be provided on the apparatus. The cooling system shall keep the engine cool when running for long periods of time and the pump cool during long periods of pumping when water is not being discharged. The cooling system shall also be set up in a way that the cooling system lines can be easily drained through the master pump drain.

The cooling system lines shall consist of high-temperature 3/8" (inside diameter) hose. The engine cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls model 3004204-2-2, 3/8" in-line quarter turn ball valve assembly and continuing on to the chassis heat exchanger. The return line from the heat exchanger shall then run into the suction side of the pump. The pump cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls model 3004204-2-2, 3/8" in-line quarter-turn ball valve assembly up to the water tank. At the water tank, the pump cooling line shall be plumbed into a 3/8" check valve on the "Tank Fill" valve. The check valve shall prevent tank water from back flowing into the pump when the cooling system is not in use. A return line from the water tank shall be plumbed into the water pump.

The engine cooling system valve shall be controlled on the operator's panel, and shall be clearly labeled, "Engine Cooler".

The pump cooling system valve shall be controlled on operator's panel, and shall be clearly labeled, "Pump Cooler".

ENGINEERING FOR FUTURE FOAM SYSTEM

The stainless manifold on the pump shall be engineered for the future installation of a Foam Pro 2001/2002 single foam system. In addition to the plumbing, the pump operators control panel shall have open space provided for installation of future foam controls.

Shop Note: The Front bumper discharge and the three (3) crosslays will be engineered for foam. There shall be space on pump panel to allow for installation of foam system controls.

PLUMBING MANIFOLD

The plumbing manifold shall consist of the inlet side manifold and the discharge side manifold. Galvanized Victaulic couplings shall be used wherever possible for ease of maintenance and superior corrosion protection.

The inlet side of the plumbing manifold shall utilize schedule 10, 304-grade stainless steel tubing and preformed elbows for inlets that are larger than 3". Side auxiliary inlets that are 3" or smaller shall utilize schedule 10, 304-grade stainless steel threaded tubing and preformed elbows. The inlet manifold shall thread into the pump auxiliary inlet ports and each inlet valve shall thread onto the inlet manifold.

The discharge side of the plumbing manifold shall utilize schedule 10, 304-grade stainless steel tubing and preformed elbows to ensure the quality of the manifold where welds are required. The discharge manifold shall connect to the pump discharge ports using 1/2" stainless steel flanges that shall be machined to seat an O-ring to ensure a leak proof seal. Each discharge shall derive from a port on the manifold assembly connected to a discharge valve with 1/2" 304-grade stainless steel flanges. Discharges that terminate in a location other than the pump module (i.e. rear discharges) that do not require welding shall utilize a combination of high-pressure flex hose and schedule 10, 304-grade stainless steel tubing to allow flexibility between the body and the pump module.

A 3/4" quarter turn drain valve shall be included. A chrome plated rectangular handle shall be provided on the drain valve to facilitate use with a gloved hand. The drain valve shall be located just above the running board and below the pump panel to reduce clutter in the pump panel area. The drain valve shall be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

INNOVATIVE CONTROLS DISCHARGE GAUGES - 2-1/2" - 0-400PSI - LED BACKLIT

The valve discharge gauges shall be 2-1/2" diameter Innovative Controls Nite-Glo pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. A clear scratch resistant molded lens shall be used to ensure distortion-free viewing and it shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless steel bezel. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°

F to +160°F.

The gauge shall exceed ASME B40.100 Grade B requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A highly-polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case.

The gauge shall be powered by a 12-volt system with two 22ga. 3ft. wire leads and shall have a display range from 0 to 400 PSI. Each gauge will have black markings on a white dial.

The gauge shall have a black dial graphic, an orange tip on the pointer, and be illuminated with light.

Shop Note: IC is working on a solution for the problem with the brass cased gauges. Do not order gauges till IC has worked out the details on the solution. We will use No-Shock gauges if new design gauges from Thuemling are not available.

MASTER PRESSURE CENTER ASSEMBLY

The master gauges shall be installed on the pump panel no more than 6 inches apart in an integrated master pressure assembly that includes the two (2) master gauges and the test port manifold.

The master intake and master discharge gauges shall be 4" diameter Innovative Controls Nite-Glo pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. A clear scratch resistant molded lens shall be used to ensure distortion-free viewing and it shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless steel bezel. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F.

Each gauge shall exceed ASME B40.100 Grade B requirements with an accuracy of +/- 1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A highly-polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case.

The two (2) master gauges shall be installed into a decorative chrome-plated zinc mounting bezel that also incorporates a test port manifold and a graphic overlay that identifies the master intake and discharge gauges, the vacuum test port, and the pressure test port. The test port manifold is solid cast brass with chrome-plated plugs.

Each gauge shall be powered by a 12-volt system with two 22ga. 3ft. wire leads. Each gauge shall have a black dial graphic, an orange tip on the pointer, and be illuminated with blue light.

The gauge on the left shall be the master pump intake gauge and display a range from -30 to 400 PSI with black graphics on a white background. The gauge on the right shall

be the master pump discharge gauge and display a range from 0 to 400 PSI with burgundy graphics on a white background.

HARDWARE BRAND

The non-Storz discharge and intake fittings provided on this apparatus shall be South Park Corp. Brand. The adapter/cap/plug fittings shall be manufactured from high-quality brass that shall be polished to remove manufacturing irregularities with a chrome finish applied to the polished surface.

The Storz discharge and intake fittings provided on this apparatus shall be Task Force Tips Brand. For corrosion resistance, the adapter shall be constructed of hard coat anodized aluminum alloy and include a polymer bearing ring for prevention of galvanic corrosion.

The auxiliary intake(s) shall terminate with NH swivels, and the discharges shall terminate with male NH threads.

DISCHARGE, PRE-CONNECT, AND INTAKE DRAINS

An Innovative Controls 3/4" quarter turn drain valve shall be included on each discharge, gated intake, and steamer valve (if applicable). A side stem, long stroke chrome plated lift handle shall be provided on the drain valve to facilitate use with a gloved hand. The drain valve shall have a verbiage tag that angles upward so that it can easily be seen and read by the operator before opening. The drain valve shall be located just above the running board and below the pump panel to reduce clutter in the pump panel area. The drain valve shall be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

AUTOMATIC DRAINS

A Class 1 automatic drain shall be installed on the deluge valve (if applicable). The drains shall also be located in low laying areas (i.e., front discharge) The Drains will open whenever the pressure in the line drops below 6 PSI.

PLUMBING LABELS

Innovative Controls brand labels shall be used to identify any pump valve controller, gauge, or drain on the apparatus. The labels shall be color coded in accordance with NFPA 1901, current edition compliance. The colors and verbiage of the labels shall be the OEM standard label package. The label package shall comply with the following:

- Each Pump-to-Tank Fill shall be labeled "Tank Fill" and shall have a light blue label color.
- Each Tank-to-Pump shall be labeled "Tank to Pump" and shall have a navy blue label color.
- Each intake label shall be burgundy in color and shall have verbiage to identify it.
- Each discharge label shall have a unique color and shall have verbiage to identify it.

For easy identification of each component, the verbiage of each label shall be size 22 pt font: Helvetica Neue Condensed Bold"

The tank plumbing valves and controllers shall have the OEM Standard label package unless stated otherwise. The Pump-to-Tank Fill shall be labeled "TANK FILL" and shall have a light blue label color. The Tank-To-Pump shall be labeled "TANK TO PUMP" and shall have a Navy Blue label color.

2-1/2" TANK FILL

A 2-1/2" tank fill shall be plumbed from the pump to the tank. Installation shall be completed with 2-1/2" Class 1 rubber hose and stainless steel hose couplings.

An Akron Brass, model 8825, 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1 manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

3" TANK-TO-PUMP

A 3" tank-to-pump shall be plumbed with a Class 1 flexible hose from the tank to the suction side of the pump. An Akron Brass, model 8830, 3" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall also include a necessary B3-SH pump flange adapter, which shall be specifically used for the tank-to-pump line to properly adjust the plumbing based on the pitch of the pump. The valve shall carry a ten (10) year warranty by the valve manufacturer.

A check valve shall be between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.

The valve shall be actuated by an Akron Brass, model R1 manual actuator. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

6" DRIVER SIDE MAIN INTAKE

A 6" main intake shall be located on the driver's side of the pump module. The suction fittings shall include a removable die-cast screen to provide cathodic protection for the pump thus reducing corrosion. A short steamer barrel shall be installed to accommodate an intake valve without exceeding the legal overall body width. The intake shall terminate male NH threads.

One (1) 6" NH thread long handle chrome plated vented steamer cap, complete with OEM manufacturer logo, shall be provided.

2-1/2" DRIVER'S SIDE AUXILIARY INTAKE

A 2-1/2" gated auxiliary intake with 2-1/2" plumbing shall be provided on the driver's side of the pump module. The auxiliary intake shall be fully recessed behind the panel in order to keep the valve protected from the elements.

An Akron Brass, model 8825, 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model TSC manual actuator installed directly on the valve. The handle shall allow the valve to be controlled directly at the valve.

One (1) 2-1/2" NH thread rocker lug chrome plated vented plug, complete with cable or chain, shall be provided.

6" OFFICER SIDE MAIN INTAKE

A 6" main intake shall be located on the officer's side of the pump module. The suction fittings shall include a removable die-cast screen to provide cathodic protection for the pump thus reducing corrosion. A short steamer barrel shall be installed to accommodate an intake valve without exceeding the legal overall body width. The intake shall terminate male NH threads.

One (1) 6" NH thread long handle chrome plated vented steamer cap, complete with OEM manufacturer logo, shall be provided.

2-1/2" OFFICER'S SIDE AUXILIARY INTAKE

A 2-1/2" gated auxiliary intake with 2-1/2" plumbing shall be provided on the officer's side of the pump module. The auxiliary intake shall be fully recessed behind the panel in order to keep the valve protected from the elements.

An Akron Brass, model 8825, 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model TSC manual actuator installed directly on the valve. The handle shall allow the valve to be controlled directly at the valve.

One (1) 2-1/2" NH thread rocker lug chrome plated vented plug, complete with cable or chain, shall be provided.

All intakes shall have the OEM Standard label package unless stated otherwise. All intake labels shall be burgundy in color. Specific verbiage on each intake label tag shall be determined at the pre-construction meeting.

2-1/2" DRIVER'S SIDE DISCHARGE

A 2-1/2" discharge with 2-1/2" plumbing shall be located on the driver's side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass model 8625 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass rack and sector actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

One (1) 2-1/2" female NH thread swivel rocker lug x 2-1/2" male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2" NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

2-1/2" DRIVER'S SIDE DISCHARGE

A 2-1/2" discharge with 2-1/2" plumbing shall be located on the driver's side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass model 8625 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass rack and sector actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

One (1) 2-1/2" female NH thread swivel rocker lug x 2-1/2" male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2" NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

2-1/2" OFFICER'S SIDE DISCHARGE

A 2-1/2" discharge with 2-1/2" plumbing shall be located on the officer's side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass, model 8825, 2-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle at the pump operator's panel.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

One (1) 2-1/2" female NH thread swivel rocker lug x 2-1/2" male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2" NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

3" OFFICER-SIDE DISCHARGE

A 3" discharge, with 3" plumbing, shall be located on the officer's side of the pump compartment. The discharge shall terminate in male NH thread.

An Akron Brass, model 8830, 3" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve.

The valve actuator shall be controlled by an Elkhart Brass, model RC-10, handwheel valve controller. The 5" cast aluminum handwheel shall be connected to the remote mounted valve. The actuator housing and push-rod shall be constructed of light-weight extruded aluminum. A precision needle thrust bearing and hardened thrust washers shall

assure smooth, efficient operation and accurate flow and pressure control capability. Opening and closing speed shall comply in accordance with NFPA 1901, current edition to minimize effects of water hammer.

A valve position indicator shall show the position of the ball valve in accordance with NFPA 1901, current edition. The valve position indicator shall provide the pump operator with the status of the valve at a glance. Red shall mean fully closed; Green shall mean fully opened; Yellow shall indicate a gated position. LED lamps shall provide a reliable signal with a wide viewing angle even in bright sunlight. Reliable solid state valve position sensors shall be water and lubricant resistant. The integrated circuit board and lamp sockets shall be completely encased in epoxy for total protection from the elements.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

One (1) 5" swivel Storz x 3" female NH thread swivel rocker lug 30-degree elbow adapter shall be provided. The elbow shall be constructed of hard coat anodized aluminum alloy and have a silver powder coat finish inside and out.

One (1) 5" Storz blind cap, complete with lanyard, shall be provided.

1-1/2" FRONT BUMPER DISCHARGE

A 1-1/2" discharge shall be located above the gravel shield on the officer's side of the front bumper. The discharge shall be plumbed with 2" chassis installed stainless steel plumbing and OEM installed stainless steel plumbing and high-pressure flex hose with stainless steel couplings. The discharge shall terminate in male NH thread.

The discharge shall have Class1 automatic drains installed in the low routed areas below the manual drain. The automatic drains shall open whenever the pressure in the line drops below 6 PSI.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

2-1/2" DRIVER'S SIDE REAR DISCHARGE

A 2-1/2" discharge, with 2-1/2" plumbing, shall be located on the driver's side rear of the apparatus. The discharge shall terminate with male NH thread.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

One (1) 2-1/2" female NH thread swivel rocker lug x 2-1/2" male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2" NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

CROSSLAY CONFIGURATION

Two (2) 1-1/2" and one (1) 2-1/2" crosslay pre-connects shall be located above the pump panel. High-pressure flex hose with stainless steel couplings shall be used in the plumbing.

A 90-degree swivel elbow shall be utilized to keep the hose from kinking when pulled from either side of the apparatus. The swivel for each crosslay shall be located outboard for ease of making connections while changing hose.

The crosslay area shall be adequately lit to meet requirements.

The pre-connect hose beds shall be sized to accommodate the following hose load:

The interior of the pre-connect hose bed shall have a maintenance free abraded finish.

FLOORING

The floor of the pre-connect area shall be covered with Dura-Dek fiber reinforced material. The Dura-Dek shall have "T" beams in parallel connected with cross slats that are first mechanically bonded and then epoxied. The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation.

ROLLERS

Stainless steel rollers shall be provided at each end of the crosslay hose bed to facilitate

deployment of hose. Vertical rollers shall be installed on each side of the hose bed opening and a horizontal roller shall be installed under the opening.

DIVIDERS

Two (2) dividers shall be in the crosslay area. Each divider shall be fabricated of 3/16" aluminum and shall be mounted in a channel on each end for adjustability. The dividers shall have a maintenance free abraded finish.

CROSSLAY COVER

An aluminum non-slip tread plate cover shall be installed on the crosslay hose bed. The cover shall not interfere with hose loading when in the open position. When in the open position the cover shall remain open due to automatically engaging mechanisms that require no type of latch operation to engage or release. The cover shall be provided with one full length stainless steel piano style hinge that shall attach the cover to the body. The cover shall be light yet rigid. Opening of the cover may be performed by one person on one side of the apparatus. The cover shall be rigid enough to support weight without deformation.

END COVERS

A webbing restraint shall be located on each end of the preconnected crosslays. The webbing shall be a two-piece design and one (1) side of each piece shall be wrapped around the crosslay rollers. Each piece shall be attached to each other in the center of the crosslays using Velcro.

1-1/2" PRE-CONNECT

A 1-1/2" pre-connect with 2" plumbing shall be provided. The pre-connect shall terminate out a swivel male NST threads.

The 1-1/2" crosslay pre-connect shall have a capacity of 200' of 1-3/4" double jacket fire hose stored in a single stack.

An Akron Brass, model 8820, 2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

1-1/2" PRE-CONNECT

A 1-1/2" pre-connect with 2" plumbing shall be provided. The pre-connect shall terminate out a swivel male NST threads.

The 1-1/2" crosslay pre-connect shall have a capacity of 200' of 1-3/4" double jacket fire hose stored in a single stack.

An Akron Brass, model 8820, 2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

2-1/2" PRE-CONNECT

A 2-1/2" pre-connect with 2-1/2" plumbing shall be provided. The pre-connect shall terminate out a swivel NST.

The 2-1/2" crosslay pre-connect shall have a capacity of 200' of 2-1/2" double jacket fire hose stored in a single stack.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

BOOSTER REEL

A Hannay aluminum fabricated electric rewind booster reel, with a capacity of 200' of 1" booster hose, shall be installed on the apparatus. The booster reel shall have a polished finish and shall not be painted. An automatic brake and an auxiliary manual rewind crank shall be supplied. One (1) set of rollers shall be provided. One (1) set of rollers shall be installed.

Shop Note: Reel Model number shall be EPF24-28-29

The booster reel shall be mounted above the pump in the dunnage compartment.

Shop Note: Driver side

An Akron Brass, model 8815 1-1/2" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

BOOSTER HOSE

Two (2) sections of 100' x 1" of 800 lb. test booster hose coupled with 1" NH thread pyrolite couplings shall be installed on the booster reel.

One (1) rubber covered push button switch shall be installed for the rewind control of the booster reel. The switch shall be located on the driver's side pump panel.

The booster reel shall be equipped with one (1) additional set of hose guide rollers.

3" DELUGE RISER DISCHARGE

A 3" discharge for the deluge shall be located above the pump module. The discharge shall be centered in the pump module and the riser shall terminate 3" NPT.

An Akron Brass, model 8830, 3" Swing-Out valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model R1, manual actuator installed on the valve.

The valve actuator shall be controlled by an Elkhart Brass, model RC-10, handwheel valve controller. The 5" cast aluminum handwheel shall be connected to the remote mounted valve. The actuator housing and push-rod shall be constructed of light-weight extruded aluminum. A precision needle thrust bearing and hardened thrust washers shall assure smooth, efficient operation and accurate flow and pressure control capability. Opening and closing speed shall comply in accordance with NFPA 1901, current edition to minimize effects of water hammer.

A valve position indicator shall show the position of the ball valve in accordance with NFPA 1901, current edition. The valve position indicator shall provide the pump operator with the status of the valve at a glance. Red shall mean fully closed; Green shall mean fully opened; Yellow shall indicate a gated position. LED lamps shall provide a reliable signal with a wide viewing angle even in bright sunlight. Reliable solid state valve position sensors shall be water and lubricant resistant. The integrated circuit board and lamp sockets shall be completely encased in epoxy for total protection from the elements.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic, an orange tip on the pointer, and illuminated with red light.

All discharges shall have the OEM Standard label package unless stated otherwise. Each discharge label shall be a unique color. Specific verbiage and colors on each discharge label tag shall be determined at the pre-construction meeting.

ELECTRICAL SYSTEM

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

Wire harnesses shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

Harnesses shall be modular in design; main harness system subdivided into several smaller sub-harnesses. The harness subsections shall be connected using Deutsch branded, heavy duty, environmentally sealed, connectors with silicone seals and a rear insertion/removal contact system. For isolation of electrical "zones" the harness subsections shall consist of a main harness, a pump harness with a separate pump gauge panel harness, a left body harness with a separate left compartment harness, a right body harness with a separate right compartment harness, and a rear body harness with two separate rear compartment harnesses.

The main harness and three body harnesses shall interconnect at a central, easy to

reach location and their connectors shall not be obstructed by other harnesses or fuel/air lines. In addition, the main and body harness connectors shall be color-coded for ease of identification with their respective colors noted on the accompanying electrical diagrams.

Where connectors are not provided by the electrical component manufacturer, all 12-volt lights and other electrical components (excluding rocker and toggle switches) shall connect to the harnesses using Deutsch brand connectors; butt connectors are considered unacceptable.

All Deutsch connectors shall meet the following criteria:

- All connectors shall be rated for three feet submersion in water.
- Temperature range from -67°F to 257°F continuous at rated current.
- All contacts shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used.
- All contacts shall be pull-tested to ensure their integrity.

WEATHERPROOF DOOR SWITCHES

Because of the harsh environment and susceptibility to moisture on the fire ground, the fire apparatus compartment doors shall utilize weatherproof switches. No Exceptions.

The switches shall be used for activation of the compartment lights and to provide a signal to the door open circuit in the cab.

V-MUX ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a V-MUX Multiplex System. There are several key benefits to multiplexing, one is to reduce the number of connections in a vehicle's electrical system, because of this it is important to limit the amount of modules that control certain functions of the vehicle.

Outputs:

The outputs shall perform all the following items without added modules to perform any of the tasks:

- Load Shedding: The System shall have the capability to Load Shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like Load Shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- Load Sequencing: The System shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1-second delay, 2 being a 2-second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle and can help limit damage to your charging system. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- Output Device: The System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay, when loaded to spec, has a life of 100,000 cycles. The life of a FET is more than 100 times that of a relay. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- Flashing Outputs: The System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park or any one of several combined interlocks. The flash rate can be selected at either 80, or 160 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- PWM: The modules shall have the ability to PWM at some outputs so that a Headlight PWM module is not needed. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- Diagnostics: An output shall be able to detect either a short or open circuit.

Inputs:

The inputs shall have the ability to be switched by a ground or battery signal. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

System Network:

The Multiplex system shall contain a Peer-to-Peer network. A Master-Slave Type network is not suitable for the Fire/Rescue industry. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk.

System Reliability:

The Multiplex system shall be able to perform in extreme temperature conditions, from -40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

Shop Note: Seat belt display shall be located on the home screen.

12-VOLT SYSTEMS TEST

After completion of the unit, the 12-volt electrical system shall undergo a battery of tests as listed in NFPA 1901. These tests shall include, but not be limited to:

- Reserve capacity test
- Alternator performance test at idle
- Alternator performance test at full load
- Low voltage alarm test

Certification of the results shall be supplied with the apparatus at the time of delivery.

TAIL LIGHTS

A Whelen 600 series LED tail light assembly shall be installed on each side of the rear of the apparatus. Each assembly shall include the following:

- One (1) red LED stop/tail combination light
- One (1) amber LED turn light with arrow
- One (1) clear LED backup light

The lights shall be mounted in a chrome plated four (4) light composite housing. The remaining slot in the housing shall be populated with a warning light specified in the warning light section.

REAR WORK LIGHT SWITCH

A switch shall be installed above the tail light bezel on the left side of the rear of the apparatus. The switch shall be wired to the backup lights to provide additional work lighting. The rear work light circuit shall be deactivated when the park brake is disengaged. In addition to the lights being activated by the above switch, the lights shall also come on when the transmission is placed in reverse.

MIDSHIP TURN SIGNALS

Two (2) Truck-Lite model 21 LED midship auxiliary/turn signal lights shall be installed in the rub rail, one (1) on each side of the body.

PERIMETER GROUND LIGHTING

Grote white 4" round LED lights shall be installed beneath the apparatus in areas where personnel may be expected to climb on and off the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. These areas shall include, but not be limited to, side running boards and the rear step area.

The lights shall be activated when the parking brake is engaged.

CLEARANCE LIGHTS

Grote red LED clearance lights shall be installed in the outside corners and rear middle portion of the rear tailboard. Clearance reflectors shall be placed on the apparatus to be in full compliance with applicable ICC and DOT codes and regulations.

CHASSIS SUPPLIED BACK UP CAMERA SYSTEM

A backup camera system shall be installed in the cab with the chassis. The camera shall be installed on the rear center upper portion of the apparatus.

The T1 door shall be pre wired for interlock with dump chute if one is added.

UPPER ZONE A

The upper zone A warning lights shall be supplied and installed by the chassis manufacturer.

UPPER ZONE C

Two (2) Whelen 600 Series Super-LED lights with chrome-plated flanges shall be installed in Upper Zone C, on the upper rear face of the apparatus. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

The driver's and officer's side warning lights shall both have red LED's and clear lenses.

UPPER ZONE B/D SIDE WARNING LIGHTS

Four (4) Whelen 600 Series Super-LED lights with chrome-plated flanges shall be installed, two (2) each in Upper Zone B and Upper Zone D. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

Red LED with clear lens

LOWER ZONE WARNING LIGHT PACKAGE

Four (4) Whelen 600 Series Super-LED lights with chrome-plated flanges shall be installed in the lower zone of the apparatus to be in accordance with NFPA 1901, current edition compliance. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

The lower zone warning lights shall all have red LED's and clear lenses.

UPPER ZONE C - ADD. WARNING LIGHTS

Two (2) Whelen 600 Series Super-LED lights with chrome-plated flanges shall be installed in Upper Zone C. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

The driver's and officer's side beacons shall both have red LED's and clear lenses.

TRAFFIC ADVISOR

One (1) Whelen model TAL65 LED Traffic Advisor shall be chassis supplied and OEM installed on the apparatus. The traffic directional light shall contain six (6) high intensity LED lamps in a black low profile flat style housing.

A Whelen, model TACTL5 Traffic Advisor control head shall be chassis supplied and installed with the traffic advisor. The control head shall be housed in a rugged extruded aluminum case and shall offer four (4) programmable sequence flash patterns.

The traffic directional light shall be recess mounted in the rear of the body.

AIR HORN ACTIVATION

One (1) air horn button shall be provided on the driver's side pump panel. The button shall be red in color and include a label reading "AIR HORN".

AKRON 12V SURFACE-MOUNT SCENE LIGHTS

Two (2) Akron Revel LED series, model ELRE-SLDC-SF Chrome, surface mount lights shall be installed on the apparatus. Each light shall be mounted with four (4) screws to a flat surface. Wiring shall extend from a weatherproof strain relief at the rear of the lamphead.

Each light shall have white LEDs. They shall each operate at 12/24 volts DC, and generate 14,000 lumens of light. The lens shall redirect the light along the vehicle and out onto the working area.

Each lamphead housing shall be aluminum with a chrome colored bezel.

The two (2) lights shall be installed forward on the side face of the apparatus body, one (1) on the each side.

The driver's side and officer's side scene light(s) shall be controlled by a switch located on the V-Mux display in the chassis cab. The activation for the driver's side scene lights on the V-Mux display shall be labeled "LEFT SCENE" and the officer's side shall be labeled "RIGHT SCENE."

AKRON 12V SURFACE-MOUNT SCENE LIGHTS Two (2) Akron Revel LED series, model ELRE-SLDC-SF Chrome, surface mount lights shall be installed on the apparatus. Each light shall be mounted with four (4) screws to a flat surface. Wiring shall extend from a weatherproof strain relief at the rear of the lamphead. Each light shall have white LEDs. They shall each operate at 12/24 volts DC, and generate 14,000 lumens of light. The lens shall redirect the light along the vehicle and out onto the working area. Each lamphead housing shall be aluminum with a chrome colored bezel.

The two (2) lights shall be installed on the rear side face of the body, one (1) on each side.

The driver's side and officer's side scene light(s) shall be controlled by a switch located on the V-Mux display in the chassis cab. The activation for the driver's side scene lights on the V-Mux display shall be labeled "LEFT SCENE" and the officer's side shall be labeled "RIGHT SCENE."

AKRON 12V SURFACE-MOUNT SCENE LIGHTS Two (2) Akron Revel LED series, model ELRE-SLDC-SF Chrome, surface mount lights shall be installed on the apparatus.

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The two (2) lights shall be installed on the rear face of the body, one (1) on each side.

The rear scene light(s) shall be controlled by a switch located on the V-Mux. The light(s) shall be controlled by one (1) switch. The switch shall be labeled "REAR SCENE."

In addition to the switch located on the V-Mux, the rear scene light(s) shall be activated by the rear work light switch and when the apparatus is placed in reverse.

GENERATOR

A Cummins Onan, model 8RBAB, 8000-watt hydraulic driven generator set shall be installed on the apparatus. The generator shall be rated at 8,000 watts, 66.6/33.3 amps at 120/240 volts. Current frequency shall be stable at 60 hertz. The generator shall include a variable displacement piston pump, gear motor drive, and digital control for minimal voltage and frequency variation.

The generator set shall be factory tested for proper starting and operations at extreme temperatures from -20 degrees F to +120 degrees F. The generator shall be manufactured and designed in facilities certified to ISO 9001.

The Cummins Onan generator set shall carry a 5 year, 1000 hour limited warranty from Onan.

GENERATOR DISPLAY

A LED generator display meter shall be provided with the generator. The display meter shall automatically sense a generator signal and begin displaying information. The digital meter display shall constantly monitor and display voltage, frequency, and amps. The display shall be capable of displaying total accumulated run time hours when the MODE button is pressed once. Press the MODE button twice to display the temperature of the oil returning to the oil reservoir.

Shop Note: Frog display will be on the pump panel.

One (1) remote start for the hydraulic generator shall be located in the chassis cab and one (1) remote start shall be located on the pump panel.

GENERATOR PTO CONNECTION

The hydraulic pump for the generator shall be connected to the chassis transmission through a "Hot Shift", electrically engaged power takeoff system. The control to engage and disengage the power takeoff system shall be installed in the chassis cab.

The PTO shall be capable of being operated while in "Drive". This option shall allow for onboard 120/240-volt lights to be operated while driving down the road.

The Onan generator shall be located at the front of the body.

8 CIRCUIT NON-GFI LOAD CENTER

A 120/240-volt load center shall be incorporated into the 120/240-volt wiring system. The load center shall include adequate circuit breakers to protect the loads specified on the apparatus. The entire 120/240-volt electrical system shall be installed in accordance with NFPA 1901, current edition. This shall include all testing, labeling, wiring methodology, and dimensional requirements. Certification of compliance shall accompany the apparatus at the time of delivery. All 120/240-volt A.C. wiring shall be done in accordance with NFPA 1901, current edition as well as nationally accepted electrical codes.

BRANCH CIRCUIT OVERCURRENT PROTECTION

Over current protection devices shall be provided for circuits in accordance with NFPA 1901, current edition. The load center shall be equipped with a non-GFI two pole main breaker when the six or more individual branch circuits are present. Over current protection devices shall be marked with labels to identify the function of the circuit they protect.

The generator load center shall be located on the forward bulkhead of the L1 compartment.

ELECTRIC CORD REEL

A Hannay 120 volt electric rewind cord reel shall be installed on the apparatus. A push button labeled "REEL REWIND" shall be installed for 12-volt rewinding of the cord reel.

Rollers shall be supplied to prevent damage to the electrical cable if pulled in any direction.

The cord reel shall be equipped with 200' of yellow STW Seoprene 10/3 wire installed with a cable stop to prevent damage to cable fittings. The cord shall terminate in a single L5-20 twist lock receptacle.

JUNCTION BOX

An Akron Brass Extenda-Lite, model EJBX, backlighted electrical junction box equipped with four (4) electrical receptacles, two (2) per side, shall be provided. Each receptacle shall be equipped with a spring loaded snap cover. The cord reel shall be connected to the cast aluminum junction box through a 12" pigtail with heavy duty water resistant strain relief and flexible extender. The pigtail shall utilize an L5-20 twist lock plug and connector to supply power to the receptacles. Each side of the junction box shall be fitted with polypropylene faceplates, which are backlighted, so that plug orientation to the receptacles is quick and easy to align.

The junction box shall be equipped with an Akron Brass, model CS, cord stop.

The junction box shall have a gray powder-coat finish.

One (1) NEMA 5-15R, 120 volt, duplex, 3-wire, straight blade (household type) receptacle shall be installed on the junction box.

One (1) NEMA L5-20R, 120 volt, single, 3-wire, twistlock receptacle shall be installed on the junction box.

One (1) NEMA 5-15R, 120 volt, duplex, 3-wire, straight blade (household type) receptacle shall be installed on the junction box.

One (1) NEMA L5-15R, 120 volt, duplex, 3-wire, twistlock receptacle shall be installed on the junction box.

The cord reel shall be located in the dunnage compartment.

AKRON BRASS 120V TELESCOPING LIGHTS

There shall be one (1) pair of Extenda-Lite®/Akron Brass, model ELSS-XLAC-PU-SM2, telescoping lights installed on the apparatus. The push-up poles shall be mounted on the apparatus with side mount brackets. The lights shall be used as a telescoping Extenda-Lite. All mounting brackets and pole fittings shall be heavy duty, cast aluminum that are powder painted white to match the light head. The tripod shall be equipped with an LED light. The lamp shall be rated 120 volts @ 1.8 amperes and have an output of 20,000 lumens with a highly polished specular hammertone reflector. Lights shall be UL Listed as recommended by the NFPA . All tripod poles and legs shall be made only from drawn aluminum tubes. Each pole shall be deep etched and clear anodized to ensure a corrosion free appearance and lasting durability. The telescoping pole shall rotate 360 degrees left or right and the light head tilt up and down.

The lights shall be located on the rear of the chassis cab, one (1) on each side. A stainless steel guard shall be installed on the chassis behind the light heads to protect the paint.

Each light shall be controlled on the pump panel with its own individual switch.

CHASSIS PAINT

The two-tone chassis cab shall be painted by the chassis manufacturer.

BODY PAINT PREPARATION

The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting:

- All aluminum sections of the body shall undergo a thorough cleaning process, starting with a phosphoric acid solution to begin the etching process, followed by a complete rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the aluminum surface for greater film adhesion.
- After the cleaning process, the body and its components shall be primed with a high solids primer and the seams shall be caulked.
- All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be heavily chrome plated. Iron fittings shall be copper underplated prior to chrome plating.

PAINT PROCESS

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

The body shall go through a three-stage paint process: primer coat, base coat (color), and clear coat. In the first stage of the paint process, the body shall be coated with PPG F4936 Low VOC / High Solids primer to achieve a total thickness of 2-4 mills. In the

second stage of the paint process, the body shall be painted with PPG FBCH Delfleet High Solids Polyurethane Base Coat. A minimum of two to three coats of paint shall be applied to achieve covering. In the final stage of the paint process, the body shall be painted with PPG F3906 Clear Coat. A minimum of two to three coats shall be applied to achieve a total dry film thickness of 2-3 mills.

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

HAND POLISHED

After the Force Dry / Bake Cycle and ample cooldown time, the coated surface shall be sanded using 3M 1000, 1200, and/or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M super duty compound to add extra shine to coated surface. No more than .5 mil of clear shall be removed in this process.

BODY PAINT COLOR

The body shall be painted with PPG High Solids Polyurethane Base Coat.

The single tone body shall be painted PPG# FBCH-71096-ALT red.

UNDERCOATING

The apparatus shall undergo a two-step undercoating process. The first step shall be a rubberized polyurethane base compound applied after the body has been primed. The materials used incorporate unused paint products to reduce the amount of waste released into the environment. This coat shall be applied to all hidden pockets and surfaces that are not visible after completion.

As a final step, the entire underside of the body shall be coated with a bituminous based automotive type undercoating when the apparatus is completed. During this application, special care shall be taken to avoid spraying the product on air lines, cables, or other items that would hinder normal maintenance.

CORROSION PREVENTION

One (1) 3.75-ounce tube of Electrolysis Corrosion Kontrol (ECK) shall be provided to use when additional items are mounted to the apparatus. ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains an anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.

SAMPLE PAINT CARD

One (1) sample paint card shall be provided with the apparatus. The card shall show an example of the apparatus body color on one side and have the specific PPG paint formula printed on the reverse side.

REFLECTIVE STRIPING – FRONT CAB

The retroreflective stripe located on the sides of the apparatus shall wrap around the front of the chassis cab and terminate at chassis grill.

PAINT BREAK LINE

22KT engine turned gold leaf striping shall be installed at the two-tone paint break on the apparatus.

RUB RAIL REFLECTIVE STRIPING

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

REFLECTIVE STRIPING

3M Scotchlite Retroreflective striping shall be applied to the exterior of the apparatus and shall conform to the reflectivity requirements in accordance with NFPA 1901, current edition.

The striping shall consist of:

- 1" retroreflective stripe
- 1" gap
- 4" retroreflective stripe
- 1" gap
- 1" retroreflective stripe

The striping shall be low across the front of the chassis and along the sides up to the first compartment on each side where it shall angle up to a point in the upper compartments, where it then shall run level to the back edge of the body.

The upper stripe shall be white.

The main stripe shall be white.

The lower stripe shall be white.

CHEVRON COLOR - RED/FLUORESCENT YELLOW-GREEN

The chevron striping shall consist of red, 3M part number 1172 EC, and fluorescent yellow-green, 3M part number 3983, and shall meet the chevron color requirements in accordance with NFPA 1901, current edition.

Only 3M Diamond Grade VIP Reflective Striping shall be used. 3M Diamond Grade VIP Reflective Striping is a wide-angle prismatic lens reflective sheeting designed for the production of durable traffic control signs and delineators that are exposed vertically in service. This sheeting is designed to provide higher sign brightness than sheeting's that use glass bead lenses. It is intended to also provide high sign brightness in the legibility distance where other sheeting's do not. If something other than 3M is being used, third party documentation must be provided with the bid to prove it is compliant with Federal DOT and NFPA 1901, current edition.

CHEVRON STRIPING - REAR BODY

Retroreflective striping shall cover at least 50% of the rear-facing vertical surfaces in accordance with NFPA 1901, current edition. The striping shall be in a chevron pattern sloping downward and away from the centerline of the apparatus at an angle of 45 degrees. Each stripe shall be a minimum of 6" in width. The striping shall consist of a

solid base layer of reflective material and alternate between the exposed base layer material and durable, transparent, acrylic colored film.

The chevron pattern shall include rear face of the body and any painted storage compartment doors.

MATERIAL AND WORKMANSHIP WARRANTY

OEM installed purchased parts and fabricated parts shall be free of defects in material and workmanship for a period of two (2) years starting thirty (30) days after the original invoice date. Full details shall be provided in the complete warranty document.

TEN (10) YEAR WARRANTY BODY STRUCTURAL INTEGRITY

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

STAINLESS STEEL PLUMBING LIMITED WARRANTY

The stainless steel plumbing and piping shall be free from corrosion perforation for a period of ten (10) years starting thirty (30) days after the original invoice date. Full details shall be provided in the complete warranty document.

WATER TANK WARRANTY

The tank shall be complete with a lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. Full details shall be provided in the complete warranty document.

GALVANIZED SUB-FRAME WARRANTY

The galvanized sub-frame shall be free of structural or design failure or workmanship for a period of twenty (20) years starting thirty (30) days after the original invoice date. Full details shall be provided in the complete warranty document.

PAINT LIMITED WARRANTY

The apparatus body and pump house shall be free of blistering, peeling and any other adhesion defect caused by defective manufacturing methods or paint material selection for exterior surfaces for a prorated period of three (3) years starting thirty (30) days after the original invoice date.

Paint on the undercarriage, body interior (Line-X coating included) or aerial structure related paint, if applicable, is covered only under the standard two (2) year limited warranty.

CORROSION PERFORATION LIMITED WARRANTY

The body exterior paint shall be warranted against corrosion perforation for a prorated period of ten (10) years starting thirty (30) days after the original invoice date. Full details shall be provided in the complete warranty document.

PUMP WARRANTY

The fire pump shall be warranted by Waterous for a period of five (5) years from the date

of delivery to the fire department or five and one-half (5-1/2) years from the shipment date by Waterous, whichever period expires first. Full details shall be provided in the complete warranty document.