Information received by Todd Bruning that he presented to the Bedford Township Board during public comment time on September 3, 2013 at the Bedford Township Board Meeting.

On Aug 24, 2013, at 11:27 AM, "Ahrens-Fox" <joemerrill@hmetruck.com> wrote:

Good morning,

Attached please find the proposal based on the specifications that were published. The specifications were 100% Pierce and were proprietary and exclusionary.

Several items of note would be the TAK4 front suspension. This is a horrible idea gone wrong. It is extremely difficult to maintain and the fact that there is no camber adjustment in the system means that there is excessive tire wear with most departments indicating that tires last less than a year. The maintenance of the front axle alone will allow the dealership a long life of continued repair and profit for their service center. It does not take long for anyone to find department very unhappy with this product including recent frame failures due to corrosion.

Concerning the air bag system. They allow most people to believe that the air bag system would be similar to what you would find in a modern day car. This is just not true. The officer only gets a small air bag at his knees. the driver gets an airbag that if you look at the standard truck steering wheel the face of the steering wheel faces up toward the ceiling not the driver. Therefore you actually contact the base of the steering wheel far before you would contact the air bag.
This type of option, the TAK4 and airbag system, are standard fair for Pierce Mfg. where they can convince a department that they really need these items without the department knowing that many of these items are proprietary to Pierce or that they have exclusive agreements for them. This therefore immediately leads to items that the committee can use to throw out anyone's bid.

If you review the FEMA information concerning fire apparatus deaths there are two common threads. One they did not use a seatbelt and were ejected or two the trucks rolled over. There were not any deaths from an actual front end crash that would have been saved by this system.

We are a forward thinking company but we also believe that any item we sell along with our product must work and provide a value. Pierce sells flash and big money trips. We are a Michigan based company that keeps jobs in Michigan.
As one final side note I think it is noteworthy to mention that the first tilt cab fire truck chassis was developed by HME for Pierce. That would beg the question of who is the real engineering leader?

As mention we were not on your bidder list but looking at the list it is difficult to believe that one of the other vendors on that list would not have bid if they really did receive an invitation to bid. I doubt they ever did.
It is certainly not below Mr. Lees abilities.

If there are any further items I can help you with please feel free to contact me.
Sincerely,

Joe Merrill
HME Incorporated, Wyoming Michigan
Factory Direct Sales
Web Site: http://www.firetrucks.com/about

PROPOSAL TO FURNISH FIRE APPARATUS

Date: August 24,2013

To: **Bedford Twp FD**

Dear Sirs:

We hereby propose and agree to furnish, after your acceptance of this proposal and the proper execution and approval of the accompanying contract, the following apparatus and equipment:

Two (2) HME Ahrens-Fox Pumpers on HME Custom Spectr Four Door Cab & Chassis with all equipment as described in the attached HME proposal, for the sum of:

Seven Hundred Eighty-Six Thousand, Eight Hundred dollars and no/cents
($786,800.00)

OPTION #1
Two (2) HME Ahrens-Fox Pumpers on HME Custom 1871W Four Door Cab & Chassis with all equipment as described in the attached HME proposal, for the sum of:

Seven Hundred Fifty-Nine Thousand, Five Hundred Six dollars and no/cents
($759,506.00)

All of which are to be built in accordance with the HME, Incorporated proposed specifications attached, and which are made a part of this agreement and contract, to deliver 210 calendar days after date of receipt and approval of contract, properly executed, subject to all causes beyond our control.

The amount named in this proposal shall remain firm for a period of 60 days from the date of same. All state, federal and local taxes are not included above. Any applicable taxes are to be paid by customer upon registration and licensing of vehicle. It is understood by both the Seller and the Buyer that Change Orders executed after contract acceptance may delay delivery. It is understood by both the buyer and the seller that Change Orders executed after contract acceptance may increase or decrease the price. The purchase price herein is based upon all applicable state and federal manufacturing law, regulations, orders, mandates and standards in effect as of the date of this Agreement (hereinafter "Standards") such as, for example, the Standards mandated by the National Fire Protection Association, tentative interim amendments to the National Fire Protection Association Standard, Underwriters Laboratories of Canada, and the US Environmental Protection Agency. The purchase price shall be subject to increase due to any state or federal Standards that are adopted, issued or mandated following the date of this Agreement that require the apparatus(es) described above to be manufactured and/or delivered in compliance with such Standard(s)

This Sales Contract in order to be effective and binding upon Seller must be signed and accepted by an authorized officer of HME, Incorporated. The effective date of this Sales Contract will be the date it is signed and accepted by HME, Incorporated.

All checks must be made payable to HME, Incorporated only and delivered to HME, Incorporated at its offices in Wyoming, Michigan. Under no circumstances shall payment be made to a dealer or any one else as Sellers agent. HME, Incorporated is the only authorized payee. Any representation that payment is to be made to any other party is absolutely unauthorized.

Official ownership documents shall remain property of the seller until the purchase price is paid in full. Upon receipt of payment, ownership documents shall be forwarded to the purchaser.

Respectfully submitted,
HME, Incorporated

Joseph Merrill, Factory Direct Sales

Date: 8/24/2013

We agree to accept the above proposal:
Bedford Twp FD

_____

Date: _____/_____/_____

Bedford Township

Rescue Pumper **1500 GPM Top Mount Pump**
Stainless Steel Body **1000 Gallon Water Tank**

RESPONSE TO BID

HME, Incorporated certifies that qualified personnel have read the complete Fire Department bid invitation carefully and are submitting their proposal in strict accordance with all requirements.

HME, Incorporated understands that all clarifications, corrections and/or changes shall be sent out in writing via fax to all prospective bidders from the Fire Department or purchasing authority. HME, Incorporated also acknowledges that they have no control over clarifications, corrections and/or changes required if said facsimile is not received prior to submission of our bid documents.

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

HME, Incorporated certifies that the complete apparatus shall be manufactured within the continental United States.

ESTABLISHED BUILDER

HME, Incorporated has been in continuous operation and in business since 1913.

The apparatus will be assembled in the Grand Rapids, Michigan area.

One (1)
08-02-0600

"TOP OF THE LINE" CHASSIS

The chassis bid by HME is the top of the line chassis. Some manufacturers sell different models with different levels of trim and chassis appointments. HME is providing the premier product for this bid. The interior trim, exterior finish and standard features in almost all cases far exceed that of our competition. Please review our chassis specifications against the other chassis bid. You shall find that our specifications proudly explain in detail the components and attachments supplied by HME. Take the detail provided by HME and ask the competition for the detail of what is being supplied on their chassis. Close review shall reveal the differences.

One (1)
08-04-0200

ROAD TEST CERTIFICATION

A road test shall be conducted by HME, Incorporated with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

A. The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.

B. The apparatus shall be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

C. The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.

D. HME, Incorporated shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department.

E. HME, Incorporated shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department.

One (1)
08-04-0250

12 VOLT ELECTRICAL SYSTEM LOAD TEST

Electrical System Performance Tests
The apparatus low-voltage electrical system shall be tested and certified. The certification shall be delivered to the purchaser with the apparatus.

Tests shall be performed when the air temperature is between 0°F and 110°F (18°C and 43°C).

Test Sequence
The following three tests shall be performed in the order indicated below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

Reserve Capacity Test
The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure.

Alternator Performance Test at Idle
The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

Alternator Performance Test at Full Load
The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in 11-3.3, or a system voltage of less than 11.7 volts dc for a 12-volt nominal system or 23.4 volts dc for a 24-volt nominal system, for more than 120 seconds, shall be considered a test failure.

Low-Voltage Alarm Test
Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12-volt nominal system or 23.4 volts dc for a 24-volt nominal system shall be considered a test failure.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be

considered a test failure.

Documentation
At the time of delivery, the manufacturer shall provide the following:

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

a. The nameplate rating of the alternator
b. The alternator rating under the conditions specified in 11-3.1
c. Each component load specified in 11-3.2 comprising the minimum continuous load
d. Additional loads that, when added to the minimum continuous load, determine the total connected load
e. Each individual intermittent load

One (1)
08-06-0200

LIABILITY

HME, Incorporated shall defend any and all suits and assume all liability for use of any patented process, device or article forming a part of the completed vehicle or any appliance under the contract.

One (1)
08-08-1000

INSPECTION TRIPS

Two (2) inspection trips for up to four (4) Fire Department personnel each shall be made to the HME, Incorporated manufacturing facility during the course of construction of the apparatus. Air travel (for distances over 250 miles), meals, and lodging expenses shall be included.

One (1)
08-10-0200

APPARATUS FAMILIARIZATION

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

The familiarization specialist will remain at the Fire Department for one (1) day (not less than eight (8) hours), to provide instruction to all personnel, or as instructed by Chief of the Department. All meals, motel, and travel costs are the responsibility of the successful bidder.

NFPA 4.3.2 After delivery of the fire apparatus, the purchaser shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment as defined in NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

One (1)
08-12-1600

DELIVERY DATA RESPONSE

Delivery of the completed shall be no more than two hundred ten (210) working days after acceptance of the formal contract by the HME, Incorporated, per bid requirements.

HME, Incorporated shall not be held liable for damages arising from its failure to make or delay in making deliveries because of fire, flood, riot, major component shortage, accidents, acts of God, or any circumstances beyond their control.

Information supplied at time of delivery to be as follows:

A. Line set ticket showing parts used by the manufacturer in construction of the cab and chassis.

B. Electrical "as built" schematic booklet.

C. Air system "as built" schematic booklet.

D. Final build data sheet showing serial numbers for the following:

1) Cab and chassis vehicle identification number
2) Engine
3) Transmission
4) Front axle
5) Rear axle(s)
6) Each tire showing mounting location on the chassis.

E. Final build measurement data sheet showing the following:

1) Bumper extension
2) Wheelbase
3) Rear overhang
4) Cab measurements for the ground to the bottom of the cab at all four corners and the frame to cab extreme at the frame height for all four corners of the cab.
5. Suspension measurements for the ground to the top of the frame at the centerline of the front axle and the centerline of the rear axle or centerline of the tandem axles.

F. One (1) copy of complete, as delivered, chassis operation and general maintenance instructions including, but not limited to the chassis, engine, transmission, axles, and lubrication charts shall be supplied.

One (1)
08-14-0200

BASE APPARATUS WARRANTY

HME, Incorporated shall warrant the apparatus proposed, manufactured and/or assembled to be free from defects in material and workmanship under normal use and service for a period of three (3) years from date of delivery to the Fire Department. This warranty shall cover the cost of parts and labor for this period of time. Please refer to enclosed warranty document.

CAB WARRANTY

HME, Incorporated shall warrant that the cab proposed shall not be structurally damaged inside or out by rust and/or corrosion for a period of ten (10) years. Please refer to enclosed warranty document.

FRAME WARRANTY

HME, Incorporated shall warrant the proposed frame against structural failure from bending or cracking for the entire period the chassis is owned by the original purchaser or end-user. Please refer to the enclosed warranty document.

WATER TANK WARRANTY

The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.

If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.

The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

STAINLESS PIPING WARRANTY

The bidder shall warrant that all stainless steel plumbing components used in the construction of the fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of ten years from the date of delivery to the original user-purchaser, whichever occurs first.

10 YEAR BODY LIMITED WARRANTY

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from corrosion and structural defects for a period of ten (10) years from the date that the motor vehicle was first placed in service. A body shall be considered to have "corrosion defects" if it is found by the bidder to have perforation caused by corrosion under normal use and with normal maintenance.

OTHER WARRANTIES

Applicable extended warranties for certain major chassis components such as the axles, engine, transmission, apparatus body, tank, pump and related components, etc. have also been provided as noted elsewhere in the specifications.

One (1)
08-16-0200

SINGLE SOURCE MANUFACTURER

HME, Incorporated certifies that they meet all requirements of a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufacturers their products using an integrated approach, including the chassis, cab and body being fabricated and assembled on the bidder's premises". The warranties relative to the chassis and body design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis).

One (1)
08-18-0200

VEHICLE SUPPORT DOCUMENTATION

For long term support of the vehicle and in order to provide proper maintenance, the following information shall be provided with the delivery of the vehicle. HME, Incorporated has provided this information in the exact requested format of the bid.

HME, Incorporated understands that this vehicle shall be in operation for a minimum of twenty (20) years.

The following information shall be provided in electronic format with delivery of the completed vehicle. The format shall provide hyperlinks to major categories and/or subjects from a content page. A word search engine shall provide quick transport of the user to any area within the document when a keyword or phrase is found. The entire manual shall be able to be printed from the electronic media to paper form. The manual shall be compatible with both PC and Mac platforms.

HME, Incorporated shall also provide an electronic "Operator's and Maintenance Manual". This manual shall encompass complete information for the vehicle and vehicle systems including all accessories and/or options. The "Operator" section of the manual shall describe each component, gauge and switch with proper operation and operational warnings. The "Maintenance" section of the manual shall provide proper maintenance of the vehicle for all systems and components supplied. A "Lubrication" section shall also be provided in the manual. This section shall provide all lubricant types and capacities for the vehicle. Lubrication diagrams to visually locate the lubrication points of the vehicle shall also be provided.

HME, Incorporated shall also provide an electronic "Electrical System Manual". This manual shall provide complete wiring schematics for the vehicle and diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined. Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

HME, Incorporated shall provide an electronic "Air System Manual". This manual shall provide complete air system schematics for the vehicle with diagrams of the vehicle showing the air tubing routing within the vehicle. Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

Additional documentation to be provided. A vehicle build sheet shall be provided. This build sheet shall include the major assemblies used in construction of the vehicle. Final inspection data including the serial numbers of the engine, transmission, axles, and tires equipped on the vehicle.

One (1)
08-18-0500

ORIGIN OF MANUFACTURER

HME, Incorporated is the manufacturer of the apparatus herein specified is a 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.

One (1)
00-00-0012

NFPA 1901-2009

The National Fire Protection Association "Standard for Automotive Fire Apparatus, 2009 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 specifically requested herein and the buyer shall supply the rest before the apparatus is put into service.

One (1)
00-J0-2010

CUSTOM CHASSIS - SINGLE SOURCE MANUFACTURER

The chassis shall be designed and manufactured by the apparatus builder in the manufacturer's facility. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least fifty (50) years.

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufactures their products using an integrated approach, including the cab and chassis, pump module, and apparatus body being fabricated and assembled on the bidder's premises". The warranties relative to the chassis and body design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall provide evidence that they comply with this requirement. No exceptions will be permitted to this section of the document.

The chassis shall be designed and manufactured for heavy duty fire service with adequate strength and capacity for all components as detailed within these specifications.

One (1)
01-H0-1600

CHASSIS FRAME

The frame shall be designed to industry standards. The manufacturer shall provide a life time frame side rail warranty to the original purchaser of the chassis. The frame rails shall be 10.5" x 3.5" x .375" heat treated steel.

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

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

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

Frame engine cutouts shall be made with a plasma torch to minimize the heat affected zone of the cut. All cutouts shall have a minimum of 6 inch transitions between rail flange cut depths to reduce the stress concentrations throughout the cutout area. The root of all transition areas shall have a minimum of a 2 inch radius to reduce stress concentrations at the root.

The frame rails shall be powder coated prior to chassis painting to reduce the effect of harsh road chemicals.

One (1)
01-J0-4000

CAB MAIN FRAME CROSSMEMBER

In addition to the rear cab support crossmember there shall be a main frame cross member mounted in the rear cab area. This cross member shall be a wide base flanged design to provide frame spacing and

excellent strength to prevent frame paralleling. Every frame cross member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

One (1)
07-A0-2018

FRONT AXLE

The front axle shall be a MERITOR model "MFS-18-133A-N" with a 18,740 lb. capacity.

One (1)
07-AC-5200

CRAMP ANGLE

The chassis shall have a turning cramp angle of 52-degrees. Both left and right turns have a full 52° cramp angle with tires and wheels mounted on the axle and installed in the chassis. The 52°cramp angle is achieved irrespective of options such as front suctions and disc brakes.

One (1)
07-B0-0100

FRONT AXLE OIL SEALS

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

One (1)
07-C0-0100

FRONT AXLE BRAKES

The front brakes shall be Cam-Master Q Plus, 16-1/2" X 6" (419 x 152), S-Cam, air operated heavy duty brakes for increased stopping power and brake life in severe braking applications.

The "S" cam brakes shall incorporate a double anchor pin design, for stability and smooth consistent stopping. The camshafts shall be heat treated with rolled spline construction.

The front axle shall be equipped with automatic slack adjusters (ASA) to provide optimum brake performance.

One (1)
07-R0-1018

FRONT SUSPENSION

The front suspension shall be a pin and shackle design. Front springs shall be a minimum of ten (10) leaf elliptical type, 53" x 3-1/2" x .499" forged steel. The front springs shall have a military wrapper for safe operation. For a smooth ride the spring rate shall not exceed 3,000 lbs/in deflection.

All front spring pins shall be ground heat treated steel with grease fittings for lubrication.

The entire front suspension shall be designed for heavy duty custom fire apparatus with a capacity at ground of 18,740 lbs.

One (1)
07-RS-0100

Double acting hydraulic shock absorbers are to be installed.

One (1)
07-Y0-0118

STEERING SYSTEM

The steering shall be equipped with a single SHEPPARD M110 integral power steering gear. The engine

shall be equipped with a gear driven pump.

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

One (1)
10-MF-1800

FRONT TIRES

The front tires shall be 315/80R22.5-20PR (L) MICHELIN XZA1 tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" rims.

Front axle GAWR shall be 18,180 lbs. @ 130 psi.

One (1)
10-GV-0075

TIRE SPEED RATING

The maximum tire speed rating is 75 MPH.

One (1)
10-W0-0010

FRONT STEEL RIMS

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

One (1)
10-X0-0100

FRONT WHEEL TRIM

The front axle shall be trimmed with mirror finish, 304L grade, non-corrosive stainless steel 'baby moon' hub caps with an opening for viewing the oil seal cover, and bright finished nut covers.

One (1)
40-Q0-1040

RIM FINISH

The wheels shall be painted one (1) color, on both sides, other than the standard wheel manufacturer's finish of gray.

The wheel color shall match the lower color of the exterior of the cab.

One (1)
08-AS-1027

SINGLE REAR AXLE

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

One (1)
08-AV-F160

MERITOR DIFFERENTIAL

The rear axle shall contain a Meritor 160 Series differential with an 18 inch diameter ring gear utilizing hypoid-Generoid gearing and a 2-1/4 inch diameter axle shaft.

One (1)
08-AV-S010

AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle

manufacturer's recommendations.

One (1)
08-B0-0100

REAR AXLE OIL SEALS

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

One (1)
08-C0-0100

REAR AXLE BRAKES

The rear brakes shall be Cam type, 16-1/2" X 7" (419 x 178), S-Cam, air operated heavy duty brakes for increased stopping power and brake life in severe braking applications.

The "S" cam brakes shall incorporate a double anchor pin design, for stability and smooth consistent stopping. The camshafts shall be heat treated with rolled spline construction.

The rear axle shall be equipped with automatic slack adjusters (ASA) to provide optimum brake performance.

One (1)
08-PA-0300

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 65 to 68 mph at engine governed RPM.

One (1)
08-PA-1100

NFPA TOP SPEED STATEMENT

NFPA-1901, 2009 Edition - 4.15.2 The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 MPH (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA-1901, 2009 Edition - 4.15.3 If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 MPH (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

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

One (1)
08-R0-0100

SINGLE AXLE REAR SUSPENSION

The rear springs shall be a minimum of seventeen (17) main including four (4) auxiliary leaves. The rear suspension shall have a rating of 27,000 lbs. Capacity. The rear suspension shall be a "self-leveling" slipper type with a main torque leaf that contains a military wrapper. The torque leaf shall contain a bronze bushing for long service life.

The rear hangers are to be of the slipper design. For a smooth ride the rear suspension deflection rate shall not exceed 3,790 lbs. per inch.

One (1) inch diameter rear suspension U-bolts are required.

Two (2) main frame cross members shall be mounted in the rear suspension area, bolted to the frame rail as a rear suspension support member. Each cross member shall be a wide base flanged design to provide frame spacing and excellent strength to prevent frame paralleling. Each cross member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

One (1)
09-A0-1000

AIR SYSTEM

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

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

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

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

The brake system shall be equipped with a Bendix SR-1 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

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

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

One (1)
09-A0-1208

AIR DRYER

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

The air dryer shall have a spin off desiccant cartridge.

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

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

One (1)
09-D0-0102

MANUAL AIR TANK DRAINS

All air reservoirs shall have manual 1/4 turn drain valves. The drain valves shall be supplied with rubber seats to reduce air system leaks. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained off to the atmosphere.

One (1)
09-L0-0400

MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM

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

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

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

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

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

One (1)
09-RS-1010

MERITOR/WABCO STABILITY ENHANCEMENT SYSTEM

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

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

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

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

One (1)
10-MT-2700

REAR TIRES

The rear tires shall be 12R22.5-16PR (H) MICHELIN XDS traction tread, tubeless radial tires. These tires

shall be mounted on 22.5" x 8.25" rims.

Single rear axle GAWR using these tires shall be 29,560 lbs. @ 120 psi.

One (1)
10-GV-0065

TIRE SPEED RATING

The maximum tire speed rating is 65 MPH.

One (1)
10-W0-0020

REAR STEEL RIMS

ACCURIDE, hub piloted, acrylic e-coat painted steel disc wheels shall be supplied on the rear axle.

One (1)
10-X0-0300

REAR WHEEL TRIM

The rear axle(s) shall be trimmed with mirror finish, 304L grade non-corrosive stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

One (1)
40-Q0-1040

RIM FINISH

The wheels shall be painted one (1) color, on both sides, other than the standard wheel manufacturer's finish of gray.

The wheel color shall match the lower color of the exterior of the cab.

One (1)
08-RS-0500

LASER ALIGNMENT

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

Toe In Front Axle - The toe in on a vehicle is set to reduce tire wear and to insure that the vehicle shall steer in a straight line. Toe in measurements are set to a positive 2.5 millimeters total, giving the vehicle 1.25 millimeters from side to side.

Toe In Rear Axle - The toe in on the rear wheels is set up slightly different in that the axle and wheels are set to ride the "crown" of the road. This is achieved by adjusting the toe to a measurement of no less than 1 millimeter, but no more than 2 millimeters. The ideal measurement is 1.5 millimeters total for both sides.

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

One (1)
10-GW-0122

TIRE PRESSURE MONITORING DEVICE

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

One (1)
13-DU-6425

DIESEL ENGINE

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

MODEL:	ISL9-450
NUMBER OF CYLINDERS:	Six
BORE AND STROKE:	4.49 in (114 mm) x 5.69 in (145 mm)
DISPLACEMENT:	543 cu. in. (8.9L)
RATED BHP:	450 hp (336 kW) @ 2100 RPM
TORQUE:	1250 lb-ft (1696 N-m) @ 1400 RPM
COMPRESSION RATIO:	16.6:1
GOVERNED RPM:	2200

Standard Equipment on the engine to include the following:

OIL FILTER:	A full flow / by-pass combination
LUBE OIL COOLER:	High efficiency non-drainback full flow cooling
FUEL FILTERS:	Two fuel filters providing 3 / 10 micron absolute filtration
STARTER:	12 volt
AIR COMPRESSOR:	A Wabco 18.7 cfm compressor shall be provided
AIR CLEANER:	Farr or equal with fresh air intake

One (1)
13-A0-1400

ENGINE COOLANT RADIATOR

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

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

The header plates shall be made of 16 gauge brass.

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

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

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

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

The radiator shall contain an integral coolant de-aeration tank. This tank shall be designed to remove

entrapped air or gas from the coolant side of the radiator.

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

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

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

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

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

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

One (1)
13-A0-1450

COOLANT RECOVERY SYSTEM

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

One (1)
13-A0-1500

CHARGE AIR COOLER RADIATOR

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

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

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

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

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

The charge air cooler shall contain (12) rows of internal fins within a .313 x 2.632 aluminum tube assembly. This tube assembly shall be constructed of .025 thick aluminum.

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

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

One (1)
13-A0-1700

COOLANT

The coolant system shall contain an ethylene glycol and water mixture to keep the coolant from freezing to a temperature of -34 degrees F.

One (1)
13-A0-1900

COOLANT HOSES

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

One (1)
13-A0-1974

HEATER LINE SHUT OFF VALVES

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

One (1)
13-L0-0002

ENGINE OIL

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

One (1)
13-N0-0210

ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

The Driver's dash shall include an engine brake control switch.

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

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

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

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

One (1)
13-P0-2300

ENGINE FAST (HIGH) IDLE

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

speed is factory adjustable.

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

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

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

One (1)
13-S0-0040

CORROSION INHIBITOR

Corrosion inhibitor shall be provided as an additive to the chassis cooling system.

One (1)
13-V0-0120

AUXILIARY ENGINE COOLER

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

One (1)
13-V0-0210

SPARK ARRESTOR

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers.

One (1)
13-V0-3000

HORTON FAN

A fan clutch shall be installed on the engine. A manual switch shall be provided in the dash, to over ride the fan control in event of fan failure or conditions that may result in overheating of the engine.

One (1)
13-Y0-0520

EXHAUST SYSTEM

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

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

One (1)
13-Y0-1510

CUMMINS AFTERTREATMENT SYSTEM

The chassis shall be equipped with a Cummins exhaust after treatment system in compliance with EPA 2010.

One (1)
13-Y0-3010

TAILPIPE

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

The pipe shall be unpolished stainless steel.

One (1)
13-Y0-6010

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

One (1)
13-Z0-0010

DIESEL EXHAUST FLUID SYSTEM

The chassis shall be equipped with a 5 gallon Shaw Development Diesel Exhaust Fluid (DEF) reservoir system. The reservoir shall contain an Multifunctional Head Unit (MFHU) that contains integrated level and temperature sensors. The MFHU also shall contain a coolant powered heater to thaw DEF in conditions below 12°F (-11°C) to meet governmental regulations. The reservoir shall be located on the left frame rail behind the front axle beneath the cab. The mounting system shall use stainless steel mounting brackets to reduce the possibility of corrosion.

One (1)
14-C0-3000

TRANSMISSION

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

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

TRANSMISSION COOLER

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

One (1)
14-D0-0100

TRANSMISSION FLUID

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

One (1)
14-ER-0100

FIVE SPEED PROGRAMMING

The transmission shall be programmed for five speeds.

First - 3.49
Second - 1.86
Third - 1.41

Fourth - 1.00
Fifth - 0.75
Reverse - 5.03

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

One (1)
14-ET-0100

AUTOMATIC NEUTRAL

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

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

One (1)
14-HF-0100

REMOTE FLUID LEVEL SENSING

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

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

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

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

ENGINE COOLANT

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

ENGINE OIL

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

POWER STEERING FLUID

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

FUNCTION

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

TRANSMISSION OIL

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

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

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

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

One (1)
14-W0-1100

DRIVELINES

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

One (1)
25-A0-2400

FUEL TANK

The fuel tank shall have a minimum usable draw capacity of 65.5 gallons (US) and be D.O.T. certified. It shall be mounted with straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling. The rear edge of the tank shall be tapered to allow for a greater angle of departure.

The tank shall have a 2" NPT fill to the driver's side of the chassis.

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

One (1)
25-V0-0000

FUEL LINES

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

One (1)
25-V0-1102

FUEL SHUT-OFF VALVE

A, ball type, fuel line shut off valve shall be installed in the suction side fuel line. The shut off valve shall be located near the inlet to the primary fuel filter.

One (1)
25-F0-0200

FUEL/WATER SEPARATOR

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

One (1)
45-D0-0200

ALTERNATOR

A LEECE-NEVILLE model 4890JB, 320 amp alternator shall be installed on the engine. This alternator is internally rectified and regulated.

One (1)
40-D0-0410

FIRETRUCK CAB

The apparatus shall be designed to operate in emergency conditions. These conditions require the apparatus to maneuver into areas at a high rate of speed. To facilitate in these operations a cab-over-engine design is required in order to reduce the overall length of the apparatus thus increasing the maneuverability.

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

There shall be up to six (6) positions available for occupant transport with a minimum of four (4) forward facing seating positions in the cab. The number of seats and seating locations are described in detail later in this document.

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

CAB MATERIALS AND CONSTRUCTION

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

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

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

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

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

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

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

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

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

CAB DIMENSIONS

The cab shall have the following overall dimensional requirements:

- Overall Width - 100 inches
- Roof - 12" Raised
- Center of front axle to back of cab - 60 inches
- Center of front axle to front of cab - 74 inches
- Windshield area - 3,756 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum

- Cab full tilt height - 185 inches maximum

Cab interior dimensions shall be provided as a minimum in the following chart:

- Drivers side floor width 25-1/2 inches minimum
- Floor to the ceiling in the driver and officers area of the cab 59-1/2 inches minimum
- Floor to the top of the doghouse 28-1/2 inches maximum
- Officers side floor width 24-1/2 inches minimum
- The measurement across the floor from the rear wall to the first vertical portion of the engine enclosure 39 inches
- Floor to the ceiling in the rear of the cab 65-3/4 inches minimum

CAB DOORS

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

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

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

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

FRONT DOORS

The cab front doors shall be of the full-length design enclosing the entire step area of the cab. The door shall be a minimum of 38-1/2 inches wide and 74 inches tall. The front door windows shall have a minimum of 712 square inch area of viewing glass per door. There shall be a fixed piece of forward glass in each of the front doors.

REAR CAB DOORS

The rear cab doors shall be similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 86 inches high x 34 inches wide. Each door shall have a roll down rear window with a minimum glass viewing area of 670 square inches.

INTERIOR DOOR LOCKS

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

DASH TRIM

The drivers cab dash console shall be made of black ABS with an appearance of the latest in automotive design, styling. Accompanying the dash console in the forward section of the cab shall be an officers side flat dash for the mounting of a mobile data terminal.

The forward overhead console area shall have an automotive styled black ABS covering. This console shall be provided with a center overhead area to house sirens, officer's side speedometer, AM/FM radio and an information center. The console shall have depressed areas for styling with the installation of items such as the visors, electrical access

CAB GLASS

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

All glass shall be tinted.

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

SUNVISORS

The driver and officer side of the cab shall be equipped with a sun visor. The vinyl covered visors shall be a minimum of 17-1/2" by 9".

DRIVER SIDE ELECTRICAL CABINET

Beneath the driver's seat there shall be an electrical cabinet designed to house the main battery electrical disconnect and facilitate the installation of an onboard battery charger or battery conditioner. A bolt on limited access; aluminum diamond plate hatch shall be installed on the front side of the seat box. The access hatch shall have a louvered section to provide air circulation to the cabinet. This cabinet shall not be used for casual storage.

WINDSHIELD WIPERS

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24" blades and have 28 1/2" wet arm electric pump washers. A 70 oz. Minimum windshield washer reservoir shall be furnished.

STEERING WHEEL AND COLUMN

The steering column shall be a DOUGLAS tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self-canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column. For safety, a rubber boot shall be installed to cover the steering shaft from the dash to the floor.

The steering wheel shall be a minimum of 18-inch diameter, covered with a padded absorbite finish. A lever on the left side of the steering column shall control the telescopic feature of the steering column.

FASTENERS

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

BATTERY ACCESS

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

CAB CORROSION TREATMENT

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

One (1)
14-ES-0200

TRANSMISSION SELECTOR

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

One (1)
14-ES-0400

TRANSMISSION OIL LEVEL SENSOR

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

One (1)
45-E0-0100

EMI/RFI PROTECTION

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

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

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

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

One (1)
45-NS-0802

BATTERY BOX TRAY - STAINLESS STEEL

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

One (1)
45-NS-0806

BATTERY BOX COVER - STAINLESS STEEL

To reduce road spray a stainless steel cover shall be installed on each battery box.

One (1)
45-NU-0610

DRI-DEK MATTING - BATTERY BOX

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

One (1)
45-NU-0304

BATTERY BANK

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

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

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the1 battery bank is activated.

BATTERY CABLES

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

STARTING CIRCUIT

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

One (1)
45-T0-0300

ON-BOARD ELECTRICAL AIR COMPRESSOR PUMP PLUS CHARGER

A KUSSMAUL AUTO AIR model 091-9-1200 air compressor with a 40 amp automatic battery charger shall be supplied on the chassis. A pressure switch senses when the system pressure drops and starts the compressor which then runs until pressure is restored. All ball bearing construction, lubricated for life, assures reliable operation and requires no servicing. Compressor Output: 0.30 CFM@80 PSI; 0.35 CFM@60 PSI. Pressure Switch: Adjustable Set Point-Factory set to 75 PSI Cut-in, 95 PSI Cut-out.

The Pump Plus 1200 charger senses the batteries in the vehicle and recharges exactly as much as required. When the batteries are fully charged, all charging stops. The state of charge of the batteries is indicated on a remotely located bar graph display whenever power is applied to the vehicle.

A selector switch is provided on the charger to operate the compressor either as a D.C. compressor or as an A.C. compressor. In either switch position the compressor operates from the vehicle's battery. When "D.C." is selected, the compressor operates whenever the pressure switch senses low system pressure. This is useful when parking the vehicle away from the 120 volt input power. For those operators who

wish to limit compressor operation to the times when the shoreline is connected to the vehicle, the Selector Switch should be placed in the "A.C." position. This will operate the compressor when the A.C. power is available, but shuts off the compressor when the shoreline is removed. In either switch position the compressor is operated by the vehicle's battery.

The compressor shall be located in the officer's side front step well with a bolt on style access panel. As installed in the chassis the compressor power selector switch will be placed in the A.C. position.

One (1)
45-T0-6210

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

One (1)
45-Z0-1200

SHORELINE AUTO-EJECT

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

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

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

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

One (1)
45-Z0-1304

The Auto-Eject cover shall be a Kussmaul 091-55RD, red in color.

One (1)
45-Z0-1320

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

One (1)
45-NU-0510

BATTERY JUMPER STUDS

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

One (1)
40-DE-0100

ENGINE DOGHOUSE

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

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

shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

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

One (1)
40-DE-1040

CAB DOORS - INTERIOR TRIM

To provided durability and a reflective surface for night operations the interior of the cab doors shall be finished with full length brushed stainless steel panels

One (1)
40-DE-2010

INTERIOR CEILING PADDING AND TRIM

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

One (1)
40-DE-2020

REAR WALL COVERING

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

One (1)
40-DE-2060

FLOOR COVERING

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

One (1)
40-DE-3030

CHEVRON - INTERIOR CAB DOOR

A red and white chevron reflective striping design shall be installed on each cab door for a total of four (4). The chevron shall be centered on the door kick plate and shall be visible when the cab door is open to traffic.

One (1)
40-DE-4010

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. The toe kick surface shall be covered with aluminum treadplate trim.

One (1)
40-DH-0240

GRAB HANDLES

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

Two (2) additional molded grab handles shall be installed in the cab. These handles shall be located one

each side on the B Posts side of the crew area doors.

One (1)
40-DH-1220

RADIO COMPARTMENT WITH DOOR

Beneath the officer's seat there shall be a radio compartment with interior dimensions of 19-1/2" wide x 17" long x 7" high. This compartment shall have a side mounted diamond plate door mounted on a piano hinge.

One (1)
40-DS-4120

CAB STEP DIMENSIONS

The front cab steps shall have the following overall dimensional requirements:

- Driver's lower step size 10-1/4 inches deep minimum
- Driver's lower step size 29-1/2 inches front to back

- Officer's lower step size 10-1/4 inches deep minimum
- Officer's lower step size 29-1/2 inches front to back

INTERMEDIATE CAB STEP

The cab shall have a full width intermediate "LaserGrip" anti slip inside step. The intermediate step shall be approximately 9 inches from the top of the lower step to the top of the intermediate step.

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. No portion of the cab entrance step shall be exposed when the door is in the closed position. The lower step shall be sealed from the underside of the cab to eliminate road splash from entering the step area while the vehicle is driving. The horizontal step surfaces shall be covered with bright aluminum tread plate meeting the requirements of NFPA-1901.

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

One (1)
40-DS-4210

REAR SEAT FOOT REST

A "LaserGrip" foot rest shall be provided in the crew area for the outboard rear facing seats. The foot rest shall provide an additional flat surface in the wheel well area.

One (1)
40-LC-0114

COMPARTMENT OPEN LIGHT

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

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

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

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

One (1)
40-LD-2168

LED WHITE/RED DOME LIGHTS

Four (4) 6” diameter combo color LED interior dome lights shall be provided. Each light shall be surface mounted and draw 0.65 amps at 12 volts. Lamp shall have high output white LED's with a light output of 450 lumens. The light shall be rated for 50,000 hours and have a 10 year warranty from the manufacturer.

Two (2) lights shall be installed in the front of the cab, one each adjacent to the driver and officer. Two (2) lights shall be installed in the rear crew area. All white LED's shall be operated by opening any cab door.

The same lights shall be provided with a red LED mode where the driver has switched control of the officer and crew area red lighting.

One (1)
40-LD-4120

STEP WELL LIGHTING

Four (4) step well lights shall be supplied. The lights shall be Whelen OS Series white LEDs with angled chrome plated covers, one in each step well. All step well lights shall be illuminated when any door is opened and the battery selector switch is on.

One (1)
40-U0-0200

CAB HEATER / DEFROSTER

The in cab climate control system shall be installed beneath the dash on the officers side of the cab. This unit shall include a three-speed blower, temperature control valve and a 44,000 BTU heater core.

The heater control shall be located on the doghouse mounted control center. The control shall have separate on-off blower speed switch, thermostat control and outlet blend air switch.

There shall be one heat outlet with directional and flow control provided on the driver and one on the officer side of the control center.

There shall be one under dash floor directed heat outlet provided on the driver's side and one on the officers side of the cab.

There shall be two floor heater outlets, one located on each side of the cab beneath the dash.

There shall be a Max Flow defrost system installed into the front of the cab. The ducting of the Max Flow system shall direct heated air onto the windshield to provide defrost and defog capability.

One (1)
40-U0-0310

DEFROSTER FANS

Two (2) 6" windshield defroster fans shall be mounted on the overhead console, one each side of the center of the cab.

One (1)
40-U0-0450

45,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 45,000 BTU air conditioning evaporator centrally located on the rear of the engine doghouse.

The system is to have a 12.6 cu. in. minimum compressor mounted on the engine to provide the compressed refrigerant to the system. The compressor is to be plumbed to a heavy duty truck, dual fan air conditioning condenser mounted on the cab roof. The condensing unit shall have an aerodynamic shroud that is painted to match the color of the cab roof. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from contaminates, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The evaporator shall have an externally equalized expansion valve and be thermostatically protected to prevent freeze up. Dual high performance 3-speed blowers shall provide a minimum of 700 CFM air flow. Each blower is to be controlled separately. Four (4) forward facing and three (3) rear facing full adjustable diffusers with shutoff capability shall be utilized to direct the air flow through the cab.

The air conditioning on/off switch, thermostat control, and blower switches shall be located on the evaporator unit.

The air conditioning system shall use R134A Freon.

One (1)
40-U0-0610

36,000 BTU SUPPLEMENTAL HEATER

A 36,000 BTU auxiliary heater shall be furnished inside the conditioning evaporator unit to provide additional cab heating during cooler weather. The heater core is to be plumbed to the water lines of the engine cooling system.

One (1)
40-U0-0620

CAB INSULATION

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

One (1)
40-V0-0100

DRIVER INSTRUMENTATION AND CONTROLS

The cab dash panel shall have black textured anti-glare surface. The gauges shall have red LED back lighting for enhanced visibility. Upon on initial ignition sequence a lamp check function shall illuminate the warning light telltales, the self diagnostic message center shall sequence the warning light telltales if data link communications are lost. The instrument panel shall include the following gauges and indicators.

Electronic speedometer with LCD odometer
Tri cluster gauge that includes:
- Electronic tachometer
- Engine coolant temperature gauge, with warning light and buzzer
- Engine oil pressure gauge, with warning light and buzzer

Transmission fluid temperature gauge, with warning light and buzzer

Two air pressure gauges, with warning light and buzzer
Voltmeter, with low voltage warning light and buzzer
Fuel level gauge

High beam indicator light
Parking brake set light
Turn signal indicator lights

The lighting control panel is to be located to the left side of the instrument panel. This panel shall have a black textured anti-glare surface. The lighting control panel shall include the following:

Headlight control switch
Dash rheostat for instrumentation lighting control
Wiper and washer control switches

The engine control panel is to be located beneath the instrument panel on the driver's right hand side. The panel shall have a black textured anti-glare surface. The engine control panel shall include the following:

Keyless ignition switch with a green pilot light

The apparatus control panel is located beneath the instrument panel on the driver's left hand side. The panel shall have a black textured anti-glare surface. The apparatus control panel is designed for the location of pump shift controls.

One (1)
40-V0-0120

AUDIBLE TURN SIGNAL REMINDER

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

One (1)
40-V0-0122

AUDIBLE LIGHTS ON REMINDER

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

One (1)
40-V0-0124

AUDIBLE PARKING BRAKE REMINDER

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

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

One (1)
40-V0-0130

DUAL TRIP ODMETERS

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

One (1)
40-V0-0148

SPEEDOMETER ACTIVATED IN PUMP MODE

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

One (1)
40-V0-0150

LOW FUEL LIGHT

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

One (1)
40-V0-0152

TRANSMISSION OVERHEAT WARNING LIGHT

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

One (1)
40-V0-0154

LOW VOLTAGE WARNING

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

One (1)
40-V0-0157

AIR CLEANER RESTRICTION LIGHT

An air cleaner restriction indicator light shall be installed on the dash.

AIR RESTRICTION POP-UP INDICATOR

In addition to the air cleaner restriction light an air restriction gauge shall be the popup style mounted in the driver dash area.

One (1)
40-V0-0160

LOW COOLANT WARNING

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

One (1)
40-V0-0162

INTERMITTENT WIPER CONTROL

A rotary combination intermittent electric wiper / washer switch shall be provided on the left hand side of the driver's dash.

One (1)
40-X0-1120

CONTROL CENTER

Mounted on the doghouse there shall be a black ABS driver / officer control center. This area shall include various controls and functions that must be available to the driver and officer. On the top of the control center there shall be an access panel for maintenance and troubleshooting of devices mounted on the control center.

The apparatus warning light switch panel shall be mounted on the control center immediately to right of the driver.

SWITCH PANEL

The switch panel shall be a Class 1 Smart Programmable Switch (SPS) panel installed as a multiplexed node to provide input and output information to the apparatus electrical system. The panel shall have ergonomic rubber molded rocker type switches with backlighting.

The panel shall include one (1) function as a master control switch to allow for preselection of response mode functions. The remaining switches shall be programmed and labeled with the manufacturer standards as to the custom options selected for the vehicle.

One (1)
40-V0-0510

PARKING BRAKE CONTROL VALVE

The apparatus parking brake control valve shall be located on the doghouse mounted control center.

One (1)
40-X0-1302

WHITE WARNING LIGHT CUT-OUT SWITCH

One switch position shall be provided to turn off all forward facing white warning lights for use in inclement weather.

One (1)
40-X0-6302

CUP HOLDERS

There shall be two (2) recess mounted cup holders mounted on top of the doghouse console.

One (1)
45-NS-0200

MULTIPLEXED ELECTRICAL SYSTEM

The apparatus shall be equipped with a Class 1 ES-Key Management System for complete control of the electrical system devices. This management system shall be capable of performing load management functions, system monitoring and reporting, and be fully programmable for control of the electrical system.

The ES-Key system shall utilize a Controller Area Network (CAN) to provide multiplexed control signals for "real time" operation. The system shall consist of the following components:

- *Universal System Manager (USM)* - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.
- *Power Distribution Module(s) (PDM)* - The PDM shall be a control device on the network with a primary function as power distribution. Receiving control signals from the USM the PDM turns on and off relays providing power to its connected loads. The PDM also shall contain digital switch inputs allowing for input clustering throughout the apparatus.
- *Information Display Module* - for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.

- *Input / Output Module* - The module shall have 16 inputs to communicate with the USM and 3 outputs for various chassis functions.

The ES-Key system shall provide diagnostic capabilities for troubleshooting the electrical system of the apparatus.

CHASSIS COLOR CODED WIRING

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be **COLOR CODED** and continuously marked with the circuit number and function.

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

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

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

ELECTRICAL SYSTEM CONNECTORS

All multiple conductor electrical connections shall be made with Packard electrical connectors. The Packard connectors shall become mechanically locked when mated.

All single wire terminations requiring special connectors with a ring or spade terminal shall be crimped, and wrapped with heat shrink tubing.

One (1)
45-NS-0210

INFORMATION DISPLAY MODULE

The Information Display Module for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.

One (1)
40-Y0-0100

FIRE COM INTERCOM SYSTEM

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

One (1) 3000C series intercom system features:
- Voice-activated circuitry (VOX)
- Continuous mobile radio monitoring
- Independent controls allow quick adjustment of volume and squelch
- Durable steel housing protects against heat, moisture, and damage from impact

Other installed components include:

One (1)
40-Y0-0112

DRIVER'S POSITION

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

One (1)
40-Y0-0210

One (1) Fire Com UH-10 headset(s) shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

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

Appropriate for driver or officer positions.

One (1)
40-Y0-0180

One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1)
40-Y0-0330

One (1) cables will be required for the headset installation.

One (1)
40-Y0-0113

OFFICER'S POSITION

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

One (1)
40-Y0-0220

One (1) Fire Com UH-20 headset(s) shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

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

Appropriate for crew positions.

One (1)
40-Y0-0180

One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1)
40-Y0-0330

One (1) cables will be required for the headset installation.

Two (2)
40-Y0-0114

CREW POSITIONS

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

Two (2)
40-Y0-0220

Two (2) Fire Com UH-20 headset(s) shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

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

Appropriate for crew positions.

Two (2)
40-Y0-0180

Two (2) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

Two (2)
40-Y0-0330

Two (2) cables will be required for the headset installation.

One (1)
40-Y0-0136

PUMP OPERATOR'S POSITION

The following shall be installed at the pump operators panel:

One (1)
40-Y0-0182

One (1) Fire Com PP-20 water resistant plug-in module for headset at exterior positions. Snap-tight spring-hinged lid protects against moisture, comes with standard 50’ cable.

One (1)
40-Y0-0344

RADIO INTERFACE

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

One (1)
40-Y0-2994

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

One (1)
40-Z0-0210

12VDC POWER CIRCUIT

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

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

One (1)
40-Z0-0300

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

One (1)
40-Z0-0210

12VDC POWER CIRCUIT

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12VDC POWER CIRCUIT

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One (1)
40-Z0-0300

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

One (1)
40-Z0-0810

RADIO ANTENNA MOUNT WIRING

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

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

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

One (1)
40-Z0-0857

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

One (1)
40-Z0-0830

RADIO ANTENNA MOUNT WIRING

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

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

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

One (1)
40-Z0-0857

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

One (1)
40-Z0-0410

120-VOLT AC WIRING

All 120-volt AC wiring shall be wired to the shoreline connection, circuit protected with the proper wire size to handle the current shall be provided. These circuits are provided for low amperage requirements of hand held chargers for radios and accessories.

One (1)
40-Z0-0530

The 120-volt AC power circuit shall terminate at the rear of the engine doghouse.

One (1)
40-Z0-0600

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

One (1)
40-Z0-0601

POWER STRIP

A six (6) position power strip will be supplied.

One (1)
40-Z0-1210

MAP BOX

A map box with the bins open from the top, shall be installed on the engine doghouse, as far back as possible facing the officer. The map box shall be divided into 3 bins, **inside** dimensions being 12-3/4" long x 4-1/2" wide x 8" deep. The map box shall be constructed of .125 aluminum and shall be painted to match the cab interior.

The map box shall be shipped loose for final installation by the department.

One (1)
40-Z0-9910

ROAD SAFETY KIT

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

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

One (1)
40-D0-0900

CAB CRASHWORTHINESS TEST

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

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

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

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

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

One (1)
40-DH-2100

EXTERIOR GRAB HANDLES

The cab shall have a bright anodized extruded aluminum 24" grab handles at each door position. The aluminum shall be bright anodized for long service. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

One (1)
40-DX-0110

CAB GRILLES

A three dimensional silver finished stylized front grille shall be installed on the front cab face. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

The cab shall have one (1) engine "hot" air exhaust and one (1) engine air cleaner intake, on each side of the cab. These openings shall be covered with a honey comb wire screen and shall have a bright polished stainless steel outer grille.

One (1)
40-DX-0220

HEADLIGHT TRIM

The cab shall be supplied with a stylized silver finished headlight trim. The band shall encompass the headlight housings and directional signals on each side of the cab grille and continue toward the front door hinge.

One (1)
40-G0-1010

CAB MUDFLAPS

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

One (1)
40-G0-1300

CAB GROUND LIGHTING - LED

One (1) LED, Model 44, light shall be mounted beneath each door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits. All cab ground lights shall switchable and shall automatically activate when any cab exit door is opened.

One (1)
40-J0-1500

MIRRORS

MOTO-MIRROR 16 1/2" X 7" stainless steel heated, remote control mirror heads shall be mounted on spring loaded retractable mirror arms. Includes a 5-1/2" x 8.5" convex mirror head.

One (1)
40-K0-1000

CAB SIDE WINDOWS

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

One (1)
40-K0-1210

REAR WALL WINDOWS

Two fixed tinted glass windows shall be mounted in the rear wall of a tilt cab. These windows shall be mounted on the outward side of the rear wall measuring approximately 25 inches high x 5 inches wide.

One (1)
40-K0-2020

ELECTRIC WINDOWS

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

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

One (1)
40-LE-1002

UNDER CAB ENGINE MAINTENANCE LIGHTS

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

One (1)
40-N0-0020

SIDE STAINLESS STEEL TRIM

The finished cab shall be supplied with a side mounted polished stainless steel trim band. The bottom edge of the trim band shall line up with the bottom edge of the cab. This band shall be 2 inches in height and shall run from the front door hinges to the rear of the cab on each side.

One (1)
40-N0-0810

WHEEL WELL LINERS

To reduce road splash and allow for easy cleaning, bolt in front wheel well liners are to be installed. Stainless steel material is to be used for the liner for ease of cleaning and eliminate corrosive action created by road debris. The wheel well liners are to be a minimum of 22 inches in width.

STAINLESS CAB FENDERETTES

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

One (1)
40-N0-1400

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect

the back of the cab from scratches.

One (1)
40-P0-0100

CAB TILT SYSTEM

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

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

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

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

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

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

One (1)
40-P0-0400

CAB TILT INTERLOCK

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

One (1)
40-Q0-1010

CHASSIS PAINT

The frame and running gear shall be painted gloss black enamel. The running gear shall consist of the axles, drivelines, air tanks, steering gear, frame mounted brackets, draglink(s), and fuel tank.

The air system piping and electrical harnesses shall not be installed in the frame at the time of the frame painting. This shall insure complete coverage of paint behind those areas, as well as to insure that the air piping and wiring harnesses do not have paint applied to them, hindering troubleshooting.

One (1)
40-Q0-1410

INTERIOR FINISH

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

The exterior doors and all fixed cab glass is to be removed from the cab prior to the painting process beginning.

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

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

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

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

The following interior components shall be black in color:

- Sun visors
- Cab interior overhead console
- Doghouse console

One (1)
40-Q0-2012

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

One (1)
40-Q0-2112

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

One (1)
40-Q0-2210

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

One (1)
40-Q0-2310

The doghouse covering material in the cab shall be black in color.

One (1)
40-Q0-2502

The dash housing, doghouse console; when so equipped; and the officer's glove box or console shall be black in color.

One (1)
40-Q0-3010

CAB EXTERIOR FINISH

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

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

PREPARATION

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

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

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

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

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

PRECLEAN

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

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

PRETREAT AND PRIMERS

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

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

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

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

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

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

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

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

FINISH AND COLOR COATS

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

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

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

One (1)
40-Q0-3080

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

One (1)
40-Q0-3120

CAB PAINT WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab & chassis for a period of one hundred and twenty (120) months. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

One (1)
40-S0-0010

DRIVER'S SEATING POSITION

One (1)
40-S0-1050

The seat shall be Seats, Inc. 911, air ride suspension, high back seat with a 6" double locking fore and aft slide adjustment. The seat shall have adjustments for height and ride with a contoured thigh support bottom cushion.

One (1)
40-S0-8110

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)
40-S0-0020

OFFICER'S SEATING POSITION

One (1)
40-S0-4020

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest. The seat shall be an SCBA 2+2 style with a split head rest. The seat shall have air adjustments for height and ride adjustment. The fore and aft adjustment of the seat shall be six (6) inches and contain a fore / aft shock absorber. The bottom seat cushion shall contain a contoured thigh support and a SCBA filler pad for when the bottle is not in use.

One (1)
40-S0-8110

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)
40-S0-915A

SCBA SEAT BRACKET

Mounted in the seat there shall be a SmartDock Gen II hands-free SCBA holder that is a strap-free docking station that offers a hands-free release when the firefighter rises out of the seat.

One (1)
40-S0-0080

CREW AREA - FORWARD FACING LEFT INBOARD SEAT POSITION

One (1)
40-S0-5010

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

One (1)
40-S0-8110

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)
40-S0-915A

SCBA SEAT BRACKET

Mounted in the seat there shall be a SmartDock Gen II hands-free SCBA holder that is a strap-free docking station that offers a hands-free release when the firefighter rises out of the seat.

One (1)
40-S0-0090

CREW AREA - FORWARD FACING RIGHT INBOARD SEAT POSITION

One (1)
40-S0-5010

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

One (1)
40-S0-8110

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)
40-S0-915A

SCBA SEAT BRACKET

Mounted in the seat there shall be a SmartDock Gen II hands-free SCBA holder that is a strap-free docking station that offers a hands-free release when the firefighter rises out of the seat.

One (1)
40-S0-6110

FORWARD FACING SEAT RISER AND STORAGE TRAY

The center forward facing seat(s) shall be installed on a powder coated aluminum riser. Under the seat riser there shall be an aluminum roll-out tray designed to provide safe storage for forcible entry tools in the crew area. This tray, lined with Dri-Deck, shall have a diamondplate front with a D-ring handle to provide positive lock in the closed position.

One (1)
40-S0-7510

The seat shall be black in color.

One (1)
40-S0-7240

IMPERIAL 1200 MATERIAL

The chassis seats shall have Imperial 1200, durable polyester, material in lieu of the standard vinyl. The seats shall have the Imperial 1200 material in the following applicable areas.

- Seat Base Top
- Seat Base Sides
- Seat Back Support Face
- Seat Back Support Sides
- Seat Headrests

Four (4)
40-SU-9999

HELMET HOLDER

There shall be Zico UHH-1 helmet holders provided.

One (1)
40-S0-8002

SEAT BELT WARNING LABELS

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

One (1)
40-S0-8014

VEHICLE DATA RECORDER

Apparatus shall be equipped with a Class1 “Vehicle Data Recorder and Seat Belt Warning System” (VDR/SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train’s J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 “Seat Belt Input Module” for seat occupied and belt status information.

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

SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

One (1)
40-S0-8016

SEAT BELT WARNING SYSTEM - MONITOR

Mounted in the overhead console in the driver's area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

One (1)
40-S0-8510

ROLL OVER OCCUPANT PROTECTION

The cab shall be equipped with a RollTek™ rollover occupant protection system for the driver, officer and two (2) outboard rear facing seating positions which shall include:

Integrated Roll Sensor IRS - detects an imminent rollover, activates protective devices and records crash events.

The IRS is an electronic module used to deploy advanced occupant restraint systems in the event of a vehicle roll over. The IRS may also monitor signals from a frontal crash sensor. In response to a roll event or other trigger signal, the IRS activates up to eight safety devices in a pre-programmed sequence. An event recorder tracks onboard data before and after a roll event. Real time diagnostics monitor all critical subsystems. The roll sensor is designed to meet the environmental and electrical conditions of commercial vehicles.

Integrated Belt Pretension IBP device (*not available with air suspension seats*) - tightens the seat belt around occupant, securing occupant in seat and positions occupant for contact with integrated head cushion.

The IBP is a pretensioning system using a micro gas generator to pretension the occupants belt during a roll over. The IBP is mounted only in static seating positions. The pretensioner deploys upon receiving a signal from the rollover sensor. The pretensioner retracts the cable and buckle removing slack from the belt. The buckle pretensioner is only effective when you wear your seatbelt.

Seat Pull-down System S4S (a*ir suspension seats only*) - locks seat to lowest position, increases survivable space, tightens belt around occupant, secures occupant in seat and positions occupant for contact with integrated head cushion.

The S4S is a seat and occupant pretensioning system using a stored gas powered actuator to pretension the occupants belt and pull down the suspension seat during a roll over. It is designed to safely move an occupant ranging from a 5 th percentile female to a 95th percentile male, from an elevated position relative to normal driving conditions, to the seats lowest position while maintaining a tightened belt. This action will occur in 100 to 180 milliseconds. For the S4S mechanism to provide adequate impulse to move the mass of a 95th percentile occupant in the prescribed time, it is necessary that the device produce a substantial force.

The second essential component to the seat pull down system is the pretensioning ICP bar. The bar is specially designed and incorporates pretensioning action when connected to the actuator. It provides the attachment point for the flexible tether connected to the power unit.

Inflatable Head Cushion IHC - The Inflatable Head Cushion protects the head and neck during a crash event. It uses a gas-generating device (a.k.a. inflator) to achieve its inflated state within specified design

parameters. The IHC has the flexibility to be used for roll over events and/or side impact protection, each event requiring its own, unique sensor(s) and/or sensor algorithm.

The IHC is designed to provide adequate head coverage for a range of occupants from 5th percentile female to the 95th percentile male. The cushion typically deploys and inflates in less than 50 msec after the firing current is applied. In its deployed state, the cushion covers approximately 0.17 sq. meters (1.8 sq. ft.) and occupies a volume of approximately 20 liters (1220 cu.in.). Due to its unique construction and specialized coating, the airbag is capable of maintaining adequate pressure for a minimum of 5 seconds. This device shall affect the driver, officer and adjacent seats to cab side excluding theatre flip-up style seating.

One (1)
42-A1-3012

FRONT BUMPER

A 12" high heavy-duty 10 gauge, polished stainless steel, wrap around, 2-rib front bumper shall be provided the full width of the cab.

One (1)
01-V0-3321

BUMPER EXTENSION

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

The front bumper face shall extend 21 inches ahead of the front face of the cab skin.

One (1)
01-W0-0900

TOW LOOPS

Two (2) heavy duty fabricated tow/lift loops shall be provided on front extension. These hooks shall be manufactured from a minimum of 1-1/4" thick 50,000 psi yield material. The loop eyes shall have a minimum inside dimension of three inches.

These loops shall be attached to the extension frame rail with a minimum of four (4) Grade 8 fasteners on each loop.

One (1)
01-W0-0912

The tow loops shall be mounted downward with the eye beneath the front bumper, one (1) each side immediately outside the frame rails.

One (1)
01-W0-0920

The tow loops shall be painted chassis frame and running gear color.

One (1)
01-Z0-8012

GRAVELSHIELD

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

One (1)
01-Z0-8202

CENTER HOSEWELL

A hosewell shall be installed in the center of the gravelshield. The hosewell shall be constructed of .125" aluminum. The upper edges of the hose well shall be tapered to allow for smooth, snag free removal of the hose. The hosewell shall be 26-1/2" wide x bumper depth deep x (extension - 6") front to back. The hosewell shall be mounted between the bumper extension rails.

One (1)
01-Z0-8710

HOSEWELL COVER

The hosewell shall include a diamond plate hinged cover. The cover shall be manufactured with bevel style ends. A "D-Ring" handle shall be used to open the lid with a gas shock to hold the lid in the open position.

One (1)
40-H0-1110

AIR HORNS

Dual stutter tone air horns shall be recessed into the front bumper, one each side.

One (1)
40-H0-1201

AIR HORN IGNITION CONTROL

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

One (1)
40-H0-1210

AIR HORN CONTROL SWITCH

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

One (1)
40-H0-1302

AIR HORN OPERATION

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

One (1)
40-H0-2130

ELECTRONIC SIREN

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

One (1)
40-H0-5410

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

One (1)
40-H0-3010

Q2B MECHANICAL SIREN

A FEDERAL Q2B mechanical siren shall be mounted on top of the gravel shield on the left (driver's) side.

One (1)
40-H0-5110

MASTER WARNING LIGHT CONTROL

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

One (1)
40-H0-5210

A momentary rocker switch shall be provided in the driver's switch panel for operation of the siren brake. This switch shall be backlit with the legend "SIREN BRAKE".

One (1)
40-H0-5360

SIREN CONTROL SWITCHES

One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and the one (1) button switch on the officer's side. The officer's button switch shall have a red rubber boot and be clearly labeled 'Siren'.

One (1)
40-HA-2010

SIREN SPEAKERS

There shall be two (2) Cast Products polished aluminum 100 watt speakers provided. The speakers shall be recessed into the front bumper, one each side, immediately outboard of the chassis frame rails.

One (1)
69-C0-0200

ELECTRONIC CHASSIS OPERATOR'S MANUAL

An electronic Operator's Manual w/Parts List - One Set shall be provided with the chassis.

An electronic Electrical System Manual shall be provided.

- This manual shall provide complete wiring schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided.

- This manual shall provide complete air system schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

One (1)
70-W0-0410

MERITOR/ROCKWELL STANDARD AXLE WARRANTY

The vehicle shall be covered by Arvin/Meritor warranty that is in effect at the time of the vehicle production.

One (1)
70-W0-0510

STANDARD TRANSMISSION WARRANTY

The chassis shall have a five (5) year unlimited mileage as defined in the Allison New Product Warranty.

One (1)
70-W0-0610

ENGINE WARRANTY

The engine shall have the standard 5 year warranty from the engine manufacturer that is in effect at the time of the vehicle is placed into service.

One (1)
70-W0-8202

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period of ten (10) years or fifty thousand 50,000 miles which ever may occur first. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

One (1)
70-W0-9110

CAB & CHASSIS WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab & chassis for a period of thirty-six (36) months, or the first 48,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

One (1)
20-02-0100

HYDRA TECHNOLOGY

The pump module must employ Hydra Technology. Due to the design a pump module manufactured with Hydra Technology is compact in size; massive in performance.

Each component in the module must undergo a selection and placement analysis staff engineers. Utilizing advanced 3D software the engineers goals must provide component placements for ergonomics with a completed module that produces maximum water flow with optimum versatility. Only after the complete analysis and build of the module in the computer can the build of the hardware in the shop begin.

Pump module design beginning with a foundation; cage framework assemblies that are precision manufactured from strong corrosion free heavy wall stainless steel tubing. This framework mounts to the truck frame through a mounting design complimented with iso-mount elastomer cushions. The result

shall be a mounting system that allows for the twisting movement of the truck frame without undue stress loading of the pump module.

Next assembled shall be the stainless side panels. Brushed, mirror polished or power coated the stainless steel side panels provide strength and durability. Precise engineering allows each panel to be laser machined before assembly; instead of drilling holes technicians shall spend their time on assembly techniques that provide installations that breeze through strict quality assurance.

A thorough review of the valve control placements on a control module shall result in a neat and orderly layout. Open the access door on a side control module and peer inside. The horizontal control rods appear neat and orderly. The appearance is only a portion of the requirement. The same neat and orderly appearance after countless hours of engineering design and ergonomic study provide a smooth trouble free linkage for valve operation. Another by product of the low profile control rod placement is the ability to offer ladder through the tank storage designs.

On a top control module mount valve controls are attached to the valves through high performance stainless steel aircraft type cable assemblies. Cables eliminate the inefficiencies of control rods connected to a valve. Operate a cable controlled top panel and you will feel the difference; smooth and precise across the full valve operation.

The gauge panel door shall be an expansive double wall stainless door supported by a 3/8 inch diameter hinge pin. The double wall door provides unsurpassed strength and gauge protection while thwarting the casual attempt of tinkering. Authorized servicing of the components within the door is simplified with a bolt on access panel.

Inside the access door; there shall be a clean well build appearance. Stainless steel piping, stainless steel panels, and a stainless steel framework all to provide years of trouble free service. Pipe threads are not allowed on plumbing larger than 1-1/2 inch in diameter. The pump module design shall employ Victaulic coupling connections in the pump module to save time when servicing a component. Installation of components without the use of pipe threads allows for “drop-out” maintenance of critical components without disassembly of entire piping systems. Drop in valves and manifolds with Victaulic couplings are only the start of the serviceability designed into this pump module.

Apparatus taking exception to any portion of this requirement will not be acceptable.

One (1)
20-02-0280

PUMP COMPARTMENT

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of stainless steel tubing, angles and channels, which does not support the fire pump and or running boards. The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly and shall have an approximate width of 47". The pump compartment shall be a modular design.

A stainless steel framework shall provide the support for the mounting of the pump lower panels, speedlay hose beds, and pump access doors.

An upper stainless steel assembly shall encompass the top mount pump operator's panel. Stainless steel structure shall be provided as a support behind all control handles enabling a firm foundation for

operation of the valve control.

An upper stainless steel assembly shall encompass the dunnage compartment and area for the deck gun if provided. The floor of this section shall be a bolt-on design to provide access for major repairs and or service.

One (1)
20-04-1200

PUMP PANEL WALKWAY - ALUMINUM DIAMOND PLATE

A walkway/running board area, 96" left to right x 21" front to back, shall be provided with the top mount pump module. The walkway shall be separate from the pump panel so that each may flex independently of the other and allow water to flow away from the operator.

Separation of the walkway and support structure from the pump compartment is desired to provide field service of the walkway without major repairs to the pump compartment in the event of an accident. The walkway supports shall be a fabricated assembly of gussets and channels. The walkway support structure shall be bolted directly to the chassis frame rails to provide proper support.

One (1)
20-04-0215

RUNNING BOARDS

The running boards shall be separate from the hose body, compartments, and pump compartment so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure from the hose body, compartments and pump compartment is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.

The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support. The running board step surface shall be covered in aluminum treadplate meeting the current revision of NFPA 1901 for step requirements.

One (1)
20-04-0334

LEFT RUNNING BOARD HOSEWELL

The left running board shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

One (1)
20-04-0668

ALUMINUM TREAD PLATE COVER, RUNNING BOARD HOSEWELL

The hosewell shall include a diamond plate hinged cover. The cover shall be manufactured with bevel style ends. A "D-Ring" handle shall be used to open the lid with a gas shock to hold the lid in the open position.

One (1)
20-04-0725

DRI-DEK MATTING - RUNNING BOARD HOSEWELL

The floor of the running board hosewell shall be covered with Dri-Dek mat for improved ventilation.

One (1)
48-10-1010

The Dri-Dek mat shall be black in color.

One (1)
20-04-0336

RIGHT RUNNING BOARD HOSEWELL

The right running board shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

One (1)
20-04-0668

ALUMINUM TREAD PLATE COVER, RUNNING BOARD HOSEWELL

The hosewell shall include a diamond plate hinged cover. The cover shall be manufactured with bevel style ends. A "D-Ring" handle shall be used to open the lid with a gas shock to hold the lid in the open position.

One (1)
20-04-0725

DRI-DEK MATTING - RUNNING BOARD HOSEWELL

The floor of the running board hosewell shall be covered with Dri-Dek mat for improved ventilation.

One (1)
48-10-1010

The Dri-Dek mat shall be black in color.

One (1)
20-04-2005

WALKWAY LIGHTS

Two (2) clear lights shall be mounted on the front of the top operated pump module to provide walkway illumination. There shall be one (1) light mounted outboard on each side of the module or speedlay module if so equipped.

One (1)
20-06-0220

WALKWAY STORAGE COMPARTMENTS

Two (2) enclosed storage compartments shall be provided and installed below the top mount walkway, mounted one (1) each on the driver's and officer's side of the apparatus. Each compartment shall have the walls and floor be stainless steel and shall include an aluminum treadplate vertically hinged door, full length stainless steel piano hinge and a "D" type handle/latch.

One (1)
20-06-0260

COMPARTMENT LIGHT

One (1) compartment light shall be furnished in each walkway storage compartment. The light shall be activated by a switch that closes when the compartment door is opened.

One (1)
20-04-2005

WALKWAY LIGHTS

Two (2) clear lights shall be mounted on the front of the top operated pump module to provide walkway illumination. There shall be one (1) light mounted outboard on each side of the module or speedlay module if so equipped.

One (1)
20-04-2310

WALKWAY LIGHTS

Two (2) additional clear lights shall be mounted on the front of the top operated pump module to provide walkway illumination. There shall be one (1) light mounted outboard on each side of the module or speedlay module if so equipped.

One (1)
20-06-0800

DUNNAGE COMPARTMENT OVER PUMP

There shall be a dunnage compartment furnished on top of the pump module. The floor shall be bolted in place and removable for access to the fire pump components for major service.

One (1)
20-06-1610

DUNNAGE COMPARTMENT GRABRAILS

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on the side of the dunnage compartment just below the top edge mounted horizontal to provide easy access to the dunnage compartment. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

One (1)
20-10-1200

PUMP COMPARTMENT WORK LIGHT

The pump compartment shall have one (1) Truck Lite, model 40 clear work light to provide illumination of the pump compartment. The light shall have a weather resistant, toggle style on/off switch located inside the pump compartment adjacent to the left service door area. The power for the pump module light shall be switched thru the battery master switch.

One (1)
20-12-1200

HEAT PAN ENCLOSURE

A removable casing constructed of aluminum, completely enclosing the underside of the pump compartment and heated by the engine exhaust shall be provided. The heat pan assembly shall include access panels that can be easily removed from their mounting locations.

One (1)
20-14-0100

PUMP SERVICE ACCESS REQUIREMENTS

It is the opinion that service access to the pump, valves, gauges and controls are of the utmost importance. Special consideration shall be taken when evaluating the pump module design of the offerer. Pump panels that offer little to no access without the use of tools shall not be considered compliant with this requirement.

One (1)
20-14-0810

TOP MOUNT PUMP CONTROL PANEL

All pump controls and gauges shall be located above the fire pump in a top mounted operator's control panel and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's panel shall be removable in one (1) section for ease of maintenance. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring

system, and pressure control system. The gauge panel shall be a removable bolt-on single panel to allow access to all gauge tubing, switch, and control wiring. The gauge panel exterior shall be made of 10-gauge stainless steel.

The lower portion of the panel shall contain the controls for all of the inlets and outlets. The controls for all of the drains shall be located on the side panels. All inlet and outlet controls shall be Class 1 lever type locking top mount controls.

Handles for the top mount controls shall be chrome plated zinc twist-lock handles with a recessed area for 2" diameter round identifications tags.

Top control connections to each 2-1/2" and larger discharge valve shall be made by the use of a stainless aircraft cable with stainless steel mounting bracketry and hardware. Top controlled connections to valves larger than 2-1/2" by means of relay arms with sold rods are not acceptable.

There shall be two (2) pump house service doors located in the upper portion of the right and left side pump panels. These panels shall be as large as possible and shall be constructed of brushed stainless steel. The access doors shall each have two (2) thumb latches. Each service panel door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

One (1)
20-15-0100

PUMP PANEL IDENTIFICATION TAGS

The identification tag for each valve shall be recessed in the face of the control handle. All discharges shall have color-coded plastic identification tags, with each discharge having its own unique color. Color-coding shall include the labeling of the outlet and the drain for each corresponding discharge.

One (1)
20-16-0800

PUMP PANEL FINISH

The upper access doors, middle horizontal support panel, inlet/discharge panels, lower side drain panels and the gauge panel shall have a black powder coat finish.

The dunnage compartment side walls, module vertical uprights and light bar shall have a brushed stainless steel finish.

One (1)
20-18-0412

CONTROLS AND GAUGES

The following shall be provided on the pump and gauge panels in a neat and orderly fashion. The gauge panel shall include the following:

One (1)
20-18-1420

PRESSURE GOVERNOR, MONITORING, and MASTER PRESSURE DISPLAY

Fire Research InControl series TGA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1-3/4" from the front of the control module. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:
Pump discharge; shown with four daylight bright LED digits more than 1/2" high
Pump Intake; shown with four daylight bright LED digits more than 1/2" high
Pressure / RPM setting; shown on a dot matrix message display
Pressure and RPM operating mode LEDs
Throttle ready LED
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.
The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:
High 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 and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

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

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

One (1)
20-18-1550

PRESSURE GAUGES

Each line pressure gauge shall be mounted immediately above the control for the corresponding valve.

The individual line *pres*sure gauges for the discharges shall be 2-1/2" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 - 400 psig.

The gauges shall be fluid filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to -40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus 3% balance, per ANSI B40.1, Grade 1A.

To prevent internal freezing and to keep contaminants from entering the gauge, the stem and bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

All line pressure gauges shall be mounted adjacent to the corresponding discharge control tee handles.

One (1)
20-18-1570

PUMP PANEL LIGHTING

The pump operator's panel shall be supplied with a LED light system. LED strip lights with a stainless steel hood shall be mounted across the top of the pump panel gauges and controls.

LED strip lights with a stainless steel hood shall be provided on each side of the pump module above the side panels.

All pump module lighting shall illuminate when the parking brake is engaged.

One (1)
20-18-2040

DRAIN DISCHARGES

The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

One (1)
20-18-2404

AIR HORN ACTIVATION SWITCH

A switch shall be located on the pump panel to activate the chassis air horn. The switch shall be a momentary pushbutton type switch with a red cover. The switch shall be supplied with the proper identification label.

One (1)
20-19-0006

RADIO COMPARTMENT

A fully enclosed polished stainless steel radio compartment shall be furnished and installed on top of the top mount pump operator's panel. The radio compartment shall be construct of 12ga. stainless steel. The compartment shall have a horizontally hinged drop down door with gasket and a single lift and turn type latch. The compartment shall be approximately 8" high x 11.75" wide x 8" deep.

One (1)
30-26-0410

WATER TANK INDICATOR

Fire Research TankVision model WLA200-A00 tank indicator kit shall be installed. The kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of aluminum, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, and a data link to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

One (1)
20-23-1000

PUMP MANUFACTURER AND MODEL

The pump shall be a Waterous CSU model midship pump.

PUMP CONSTRUCTION AND ASSEMBLY

Fire pump shall incorporate high strength involute toothform Morse HV chain drive transmission. Benefits of the chain drive include quiet, noiseless operation at high shaft speeds, and improved power transmitting capabilities due to the fact that the chain wraps itself halfway around the gear distributing a very uniform pattern of tooth engagement. Pump transmissions utilizing spur or helical drive gears which create high noise levels at elevated speeds and only permit minimal tooth to tooth engagement are not acceptable.

The shift engagement shall be accomplished by a free-sliding collar and shall incorporate an internal locking mechanism to insure that collar will be maintained in ROAD or PUMP operation. Suction intake arms shall be provided with removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

The main pump body shall be horizontally split and shall be in two sections for easy removal of the entire impeller assembly including wear rings, without disturbing setting of the pump on the chassis. Pump case halves shall be bolted together on a single horizontal plane using a single gasket.

The pump body is to be of close grain gray iron with all moving parts which come into contact with water to be of bronze or stainless steel. The pump must be tested by the pump manufacturer for 10 minutes hydrostatically at a pressure of 500 psig. Certification by the pump manufacturer must be provided.

The pump shall be provided with a plate giving the rated flow at "capacity" and "pressure" test pressures, together with the RPM of the engine at those pressures and deliveries and mounted in clear view of the pump operator's panel. Data plate shall include model and serial numbers of the pump body and chain transmission, hydro and discharge test pressures, and the date of pump and transmission manufacture.

One (1)
20-26-1800

PUMP RATING AND TEST REQUIREMENTS

The centrifugal type fire pump shall be a Waterous model CSU midship mounted with a rated capacity of 1500 GPM. The pump shall meet NFPA 1901 requirements. The Waterous Model CSU fire pump shall be midship mounted, single stage centrifugal type. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications. At time of delivery the pump shall be tested and rated as follows:

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 impeller shaft shall be of a "separable" design to allow true separation of the transmission from the pump without disassembly or disturbing either component. Fire pumps requiring disassembly of pump body and transmission to service either component are not acceptable.

One (1)
20-27-0100

ALTITUDE REQUIREMENTS

The apparatus shall be designed to meet the specified rating at 0 to 2000' altitude.

One (1)
22-06-0500

OILESS PRIMER

The pump shall be furnished with the Waterous VPO oil-less priming system.

One (1)
22-08-0400

PNEUMATIC PUMP SHIFT

The pump shift shall be air operated and shall incorporate an air cylinder with double action piston to shift from road to pump and back. A manual or electric operated pump shift mechanism is not acceptable.

The pump shift switch shall be mounted in the cab and identified as "AIR PUMP SHIFT" and include instructions permanently inscribed on the pump shift switch plate. The in-cab operating valve uses a spring loaded locking collar to prevent it from accidentally being moved.

The pump shift control assembly shall incorporate an indicating light system which will notify the operator when the shift has been completed to "PUMP" and when the chassis transmission is in correct pumping gear. The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into "PUMP" position. An additional green indicator light shall be provided adjacent to the throttle control at the pump operator's panel to indicate a completion of the pump shift.

One (1)
22-10-0600

PACKING SEAL

The fire pump shall be provided with a manually adjusted pump packing seal. One only required on the suction, inboard, side of the pump. The packing seal shall be two inches in diameter and shall be adjustable. Packing seal shall be a split graphite sealing ring with stainless steel separators.

One (1)
22-11-0200

ANODE SYSTEM

To reduce the effect of galvanic action the pump shall be equipped with two alloy (2) anodes. One anode is to be installed on the inlet (suction) side of the system and one anode is to be installed on the pressure (outlet) side of the system.

One (1)
22-14-1700

SUCTION PRESSURE RELIEF VALVE

Task Force Tips model #A1820 pressure relief valve shall be provided. The valve shall have an easy to read adjustment range from 50 to 200 PSI in 25 PSI increments. For corrosion resistance the cast aluminum valve shall be hardcoat anodized with a powder coat interior and exterior finish. The valve shall be configured for either a Waterous or Hale pump, and have a 2" male NPT threaded discharge outlet. The unit shall be covered by a five-year warranty.

The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe. The adjustment control shall be located behind the street side pump panel.

One (1)
22-18-0400

MASTER DRAIN

The apparatus shall be equipped with a Class 1 Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

One (1)
22-20-0200

UL TEST

The pump shall undergo an Underwriters Laboratories Incorporated test per Class A requirements of NFPA 1901 prior to delivery of the completed apparatus. The UL acceptance certificate shall be furnished with the apparatus on delivery.

One (1)
22-26-0200

FIRE PUMP WARRANTY

The Waterous fire pump shall carry the manufacturer's five year warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

One (1)
22-30-0200

ELECTRONIC PUMP MANUALS

Two (2) sets of electronic fire pump service and operation manuals shall be provided with the completed apparatus.

One (1)
24-02-1002

LEFT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the left side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

One (1)
30-40-1060

LARGE DIAMETER CAP

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

One (1)
24-02-1202

RIGHT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the right side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

One (1)
30-40-1060

LARGE DIAMETER CAP

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

One (1)
24-21-0032

LEFT SIDE INTAKE

There shall be an intake located on the left (street) side rear of the pump and shall contain:

One (1)
24-21-0525

A 2-1/2" intake shall be provided. The inlet shall have a 2-1/2" quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2" NST female swivel that extends through the pump panel.

One (1)
24-21-1200

The inlet valve shall have a manual control handle located on the pump top operator's control panel.

One (1)
30-40-1125

One (1) 2-1/2" chrome plated rocker lug plug with chain shall be supplied.

One (1)
26-03-0120

LEFT SIDE DISCHARGE #1

The forward discharge on the left (street) side of the pump panel shall contain:

One (1)
26-03-0425

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

One (1)
30-41-5025

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

One (1)
26-03-0130

LEFT SIDE DISCHARGE #2

The second from the forward discharge on the left (street) side of the pump panel shall contain:

One (1)
26-03-0220

RIGHT SIDE DISCHARGE #3

The forward discharge on the right (curb) side of the pump panel shall contain:

One (1)
26-03-0440

A 4" discharge shall be provided. The discharge outlet shall have a 4" quarter-turn swing-out valve. The discharge shall be provided with chrome plated straight discharge with 4" NST male threads that extends through the pump panel.

Control of the outlet shall be accomplished using an electric controller. There shall be a three light indicator provided with one (1) green, one (1) yellow and one (1) red to indicate the valve position.

One (1)
30-40-4443

STORZ ADAPTER

One (1) 4" NST Female swivel thread 30-degree down to 4" Storz hard coated aluminum adapter shall be provided. (ref. TFT AH1SP-NP)

One (1)
30-40-5010

One (1) 4" Storz cap and chain with a suction gasket shall be provided. (ref. TFT A01SP)

One (1)
26-03-0230

RIGHT SIDE DISCHARGE #4

The second from the forward discharge on the right (curb) side of the pump panel shall contain:

One (1)
26-03-0425

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

One (1)
30-41-5025

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

One (1)
26-03-0262

RIGHT SIDE HOSEWELL DISCHARGE

The right (curb) side running board of the pump panel shall contain:

One (1)
26-06-0400

REAR PRECONNECT - RIGHT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the passenger side rear of the body below the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, Schedule 40 stainless steel pipe and high pressure hose and have a 2-1/2" quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome plated 30-degree discharge elbow.

One (1)
30-41-5025

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

One (1)
26-06-0600

REAR PRECONNECT - LEFT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the driver side rear of the body below the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, Schedule 40 stainless steel pipe, and have a 2-1/2" quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome plated 30-degree discharge elbow.

One (1)
30-41-5025

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

One (1)
26-08-0600

FRONT JUMPLINE

A 1-1/2" discharge shall be located at the front bumper. The front discharge shall be plumbed using 2" stainless steel pipe and wire reinforced high pressure hose coupled with stainless steel fittings. The front discharge outlet shall have a 2" quarter-turn swing out valve with control on pump operator's panel. The front discharge shall be provided with a 1-1/2" polished stainless steel, 90-degree swivel adapter with 1-1/2" NST male outlet.

One (1)
26-09-0520

The jumpline swivel shall be located inside the rear wall of the hosewell when the hosewell is located at the left or right side of the bumper. A hosewell located in the center of the hosewell the swivel will be located in the rear wall.

One (1)
26-10-0800

VALVE CONTROL

The discharge valve shall be a 2" swing out type. Control of the valve shall be accomplished using a manual locking control on pump operator's panel.

One (1)
26-12-0500

AUTOMATIC DRAIN VALVE

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

One (1)
28-02-0400

DELUGE RISER

A 3" diameter deluge riser shall be installed above the pump. The deluge outlet shall be plumbed with a 3" quarter-turn, swing out valve and 3" ID, Schedule 40 stainless steel piping. Deluge outlet shall have control on pump operator's panel.

One (1)
26-12-0400

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4” NPT female inlet and outlet thread.

One (1)
28-02-0610

EXTEND-A-GUN

A TFT model XG18VL-XX, 18" "Extend-A-Gun" unit and mounting kit shall be provided and installed on the deck gun discharge to elevate the deck gun 18" above the travel position. A sensor shall be provided and wired to a warning light in the cab to warn if the extend-a-gun is not stowed when the parking brake is released.

One (1)
28-02-0800

DECK GUN CONTROL - MANUAL VALVE

The 3" discharge outlet shall have a 3" slow close quarter-turn swing out valve. The discharge shall be plumbed with 3" Schedule 40 stainless steel piping with 3" NPT male thread. Control of outlet shall be accomplished using a manual, locking control on pump operator's panel.

One (1)
28-04-2475

DECK MONITOR

A TFT "Crossfire" model XFT-NJ monitor top shall be furnished and installed on the monitor discharge outlet. The monitor shall be capable of being connected to either a portable base or a deck monitor discharge outlet with the appropriate adapters. The waterway inlet shall be 3.25" delivering up to 1250 gpm with low friction loss. Horizontal rotation is securely locked with a simple lever, and lever position can be visually confirmed. Only seven turns of the hand wheel change the discharge elbow from vertical to the top elevation. A pressure gauge shall be furnished on the monitor.

One (1)
28-06-2000

NOZZLE

A TFT "Master Stream" model M-R-NJ automatic master stream nozzle with halo ring shall be provided with the apparatus. The master stream nozzle shall have a 2-1/2" swivel inlet and shall be capable of flow rates of 150 -1250 GPM @ 100 psi.

One (1)
28-08-0800

STACKED TIPS

There shall be one (1) set of TFT model MST-4NJ quad stacked deluge tips and one (1) TFT model XF-SS10 stream shaper provided with the apparatus. The model MST-4NJ stacked tips shall provide four (4) orifices, 2", 1.75", 1.5" and 1.375".

One (1)
28-11-2008

PUMP DUNNAGE AREA DIMENSIONS

The area behind of the crosslays shall be the dunnage area of the pump house. This area is where the deckgun riser if so equipped protrudes above the pump module. This area shall be enclosed with approximate dimensions of 68" wide x 19" deep x 30" front to back.

One (1)
52-15-0050

120/240-VOLT AC NFPA LOAD TEST

Electrical System Testing.
The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed. The dielectric tester shall have a 500 volt-amperes (VA) or larger transformer, with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles in order to determine that connections have been properly made.

Operational Test
The apparatus manufacturer shall perform the following operational test and shall certify that the power source and any devices that are attached to the line voltage electrical systems are properly connected and in working order.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The following information shall be recorded:
(1) The cranking time until the prime mover starts and runs, if applicable
(2) The voltage, frequency, and amperes at continuous full rated load
(3) The prime mover oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable
(4) The ambient temperature and altitude

The power source shall be operated by the apparatus manufacturer at 100 percent of the systems continuous rated wattage as specified on the Power Source Specification Label for a minimum of 2 hours. Testing with a resistive load bank shall be permitted. The conditions specified in 21-14.4.1(2) and (3) shall be recorded at least every 1/2 hour during the test.

If the apparatus is equipped with a fire pump, this 2-hour test shall be completed with the fire pump pumping at 100 percent capacity at 150-psi (1035 kPa) net pump pressure. The 2-hour test shall be permitted to be run concurrently with the pump certification test required in 14-13.1.

Where the line voltage power is derived from the vehicles low-voltage system, the minimum continuous electrical load as defined in Chapter 11 shall be applied to the low-voltage electrical system during the operational test. Any termination of line voltage power by the low-voltage load management system shall be noted, and the duration of the periods of line voltage power source shutdown shall be recorded.

Vehicle support systems that are required to maintain the power source in operation shall remain within their required operational parameters.

The results of the tests listed in this section shall be supplied to the purchaser at the time of delivery.

One (1)
52-18-0400

LOAD CENTER PANEL

A Square D Homeline circuit breaker panel shall be provided in the apparatus body. All breakers shall be properly labeled. The generator shall be hard wired to the circuit breaker panel. The circuit breaker panel shall be mounted so as to not interfere with shelves or trays, if specified. The load center panel cover shall be accessible with hand tools.

One (1)
52-20-0800

The load center panel mounting location shall be in the L1 compartment.

One (1)
52-20-1210

WEATHER RESISTANT TUBING

The AC wiring in the apparatus body shall be installed in seal tite weather resistant conduit.

One (1)
52-22-0300

CIRCUIT BREAKERS

Manual reset 120-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

One (1)
52-22-2000

CIRCUIT BREAKERS

Manual reset 240-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

One (1)
52-24-2000

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in

the upper rear of the L1 compartment and shall be mounted in a weather proof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2002

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the upper rear of the L2 compartment and shall be mounted in a weather proof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2400

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the upper front of the L3 compartment and shall be mounted in a weatherproof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2100

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the upper front of the R1 compartment and shall be mounted in a weather proof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2150

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the upper rear of the R2 compartment and shall be mounted in a weather proof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2175

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the upper front of the R3 compartment and shall be mounted in a weatherproof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
52-24-2198

120 VAC RECEPTACLE

One (1) 120-volt AC receptacle shall be provided with the apparatus. The receptacle shall be located in the lower left rear of the RR1 compartment and shall be mounted in a weatherproof box with a self closing weatherproof cover.

One (1)
52-25-0550

The electrical outlet shall be a NEMA L5-20, rated at 120-volt AC, 20-amp, single twist lock receptacle.

One (1)
28-21-0110

DOUBLE SPEEDLAY HOSEBED

The speedlays shall be arranged at the front of the pump module. The #1 speedlay toward the top of the speedlay assembly and the #2 speedlay immediately below the first. The speedlays shall be 12" wide.

The top of the speedlay unit shall have a brushed stainless steel shelf to cover the upper hose area and to provide a working surface for the pump operator.

One (1)
20-06-1640

WALKWAY GRABRAILS

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on top of the speedlay area, to provide easy entry and egress from the top operators position. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

One (1)
28-21-0310

TOP SPEEDLAY

The top speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hosebed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The speedlay valve control shall be mounted on the operator's panel.

One (1)
26-12-0400

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4” NPT female inlet and outlet thread.

One (1)
28-21-0320

BOTTOM SPEEDLAY

The bottom speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hosebed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The speedlay valve control shall be mounted on the operator's panel.

One (1)
26-12-0400

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4” NPT female inlet and outlet thread.

One (1)
28-21-6010

The walkway side of the speedlay assembly shall have a bright finished aluminum front cover.

Two (2)
28-21-7020

HOSE TRAY

Two (2) removable aluminum hose tray(s) shall be provided for the speedlay hose beds. There shall be a red webbed strap at each end of the tray for easy removal of the tray.

One (1)
28-21-8010

SPEEDLAY HOSE GUIDES

Poly guides shall be provided at the sides, upper and lower edges of each speedlay opening on both sides of the apparatus body to protect the hose and couplings.

One (1)
28-21-9120

DOUBLE SPEEDLAY HOSEBED WEBBING

Black webbing shall be provided over each side opening of the speedlay hosebeds, complete with Quick release fasteners.

One (1)
30-00-0200

AKRON BALL VALVES

All ball valves shall be manual control 1/4 turn Akron heavy duty valves with stainless steel ball unless specified otherwise.

The valves shall have an all cast 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 brass ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts.

One (1)
30-20-0200

TANK TO PUMP

The tank to pump piping shall be capable of delivering water to the pump at a rate of five hundred (500) gallons per minute. This flow shall be sustained while pumping to a minimum of 80% of the certified tank capacity with the apparatus on level ground.

The tank to pump line shall run from the pump to the front face of the water tank and down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. The tank to pump line shall be 3" I.D. piping with a 3" ball valve.

One (1)
30-22-0200

TANK REFILL

A 1-1/2" tank refill line shall be provided using a quarter-turn full flow ball valve controlled from the pump operator's panel with a manual locking handle. The tank refill shall be plumbed with high pressure flexible piping and high pressure flexible piping stainless steel couplings.

One (1)
20-32-0800

FOAM SYSTEM

A Foam Pro Model 2002 built in foam injection system shall be provided with the controls at the operator's panel. The Foam Pro 2002 system shall be an electronic, fully automatic, direct injection, discharge side foam proportioning system.

The system shall be capable of handling Class A foam concentrates and most Class B foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows and remain consistent within the specified flows and pressures. The system shall be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards.

Paddlewheel-type flowmeter(s) shall be installed in the discharges specified to be "foam capable". When the use of more than one flow meter is required, and interface electronics module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.

The foam system shall have a 12 volt electric motor driven positive displacement foam concentrate pump, rated up to 5.0 gpm with operating pressures up to 400 psi. The system will draw a maximum of 56 amps at 12 volts DC. A pump motor electronic driver shall receive signals from the computer control display and power the 3/4 hp electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water system.

The proportioning system shall meet NFPA Standards for foam proportioning systems and the design shall have passed testing against SAE automotive reliability standards appropriate for the application. The foam system shall be installed in accordance with the manufacturer's recommendations.

One (1)
20-32-5052

FOAM SYSTEM

The foam system will operate as a Class A system.

One (1)
20-32-7075

SINGLE TANK FOAM TANK REFILL SYSTEM

A truck mounted 12-volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam solution up to the foam cell in the hosebed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

System features:

- Weather proof on/off rocker switch with integral green power on indicator light
- Red refill PUMP ON indicator light
- Automatic tank fill shutoff, vertical or side mount float switches
- Thermally protected 12-volt motor
- Relay operated motor power circuit
- 5 gpm capacity @ 8 foot lift
- Self priming pump, can run dry and re-prime itself automatically
- Composite pump head with Buna-N diaphragm
- All corrosion resistant components
- Compatible with Class A or Class B foam concentrates
- Quick connect inlet hose with wand
- Suction inlet strainer

One (1)
20-34-0200

FOAM SYSTEM OUTLETS

The foam system shall be distributed into the following discharge outlets:

One (1)
20-34-0525

One (1) front jumpline discharge.

One (1)
20-34-0625

Two (2) 1-1/2" speedlay discharges.

One (1)
20-36-0200

FOAM SYSTEM CONTROLS

The Foam Pro system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. The digital computer control display shall enable the pump operator to perform the following functions for the foam proportioning system:

Provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments

Show current flow-per-minute of water

Show total volume of water discharged during and after foam operations are completed

Show total amount of foam concentrate consumed

Simulate flow rates for manual operation

Perform setup and diagnostic functions for the computer control microprocessor

Flash a "low concentrate" warning when the foam concentrate tank(s) runs low

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

One (1)
22-02-0800

HEAT EXCHANGER DISCHARGE

A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel with a Class 1 valve.

One (1)
30-02-0300

WATER TANK CONSTRUCTION

The tank shall have a rated capacity in U.S. gallons, complete with lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the notice is to inform department personnel who store or use the tank that the unit is under warranty.

The tank shall be constructed of 1/2" thick Polyprene & Mac226 sheet stock. This material shall be non-corrosive stress relieved thermoplastic, white in color and UV stabilized for maximum protection. The tank shall be of a special configuration and is so designed to be completely independent of the body and compartments. All exterior tank joints and seems shall be extrusion welded and/or contain the Bent Edge™ and tested for maximum strength and integrity. The top of the tank is fitted with removable lifting eyes designed with a 3-to-1 safety factor to facilitate easy removal.

The transverse and longitudinal swash partitions shall be manufactured of Polyprene & Mac226 material. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

TANK SUMP AND CONNECTIONS

There shall be one (1) sump standard per tank. The sump shall be constructed of white Polyprene & Mac226 and be located in the left front corner of the tank, unless specified otherwise. On all tanks that require a front suction, a schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain. All tanks shall have an anti-swirl plate located above the dip tube.

There will be two (2) standard tank outlets: one for tank to sump suction line, and one for a tank fill line.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

One (1)
30-14-3000

EXTERNAL FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be furnished as an external component of the booster tank. The foam tank shall have an anti-foaming fill stack and removable screen located in an accessible area. The foam tank fill tower shall be equipped with a latch, pressure/vacuum vent and have a sealed airtight cover.

The foam tank shall be plumbed to the on board "Class A" foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain shall directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"
"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

One (1)
30-28-0210

FOAM TANK LEVEL GAUGE

Fire Research TankVision model WLA260-A00 tank indicator kit shall be installed. The indicator shall show the volume of Class A foam concentrate in the tank on nine (9) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of aluminum, and have a distinctive green label.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the foam tank near the bottom. No probe shall place on the interior of the tank. The foam tank vent shall be installed on the foam fill tower. Wiring shall be weather resistant and have automotive type plug-in connectors.

One (1)
34-04-0800

HOSEBED BULKHEAD

A stainless steel bulkhead shall be installed between the water/foam towers and the hose storage area of the hosebed. The bulkhead shall be the same height and design as the hosebed side walls.

No hosebed flooring shall be provided in the space between the bulkhead and the front wall of the hosebed.

One (1)
30-18-0200

TANK MOUNTING

A tank mounting cradle shall be supplied. The tank mounting cradle shall consist of a minimum of seven (7) crossmembers and two (2) full tank length longitudinal members. The tank shall rest on the tank mounting subframe, and shall be insulated from the sub-frame with a 2-1/2" wide rubber insulator. The tank shall sit cradle-mounted using four (4) corner angles of 8" x 8" x 4" x .250" welded directly to the tank

sub-frame. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The hosebed cross-braces shall act as water tank retainers. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body. No exception will be permitted to the tank mounting requirements.

One (1)
32-02-0200

PURCHASE INTENT

The apparatus being purchased is expected to have an 18 to 20 year service life. Based on this requirement, the department is extremely concerned that the apparatus remains structurally sound and the outward appearance remains in a “like new” condition, with minimal maintenance and upkeep, throughout the intended service life.
Aluminum apparatus bodies and differing construction designs will be reviewed and considered ONLY if the builder / manufacture provides in the respondent specifications adequate proof that procedures and materials employed in the design prevent corrosion over the intended service life. Burden of proof is on the bidder and final determination of acceptability will be solely determined by the department.
The entire body design shall be of a laser machined, bolted design to allow for ease of removal for repair or replacement, without cutting welds.

APPARATUS BODY DESIGN AND CONSTRUCTION

The apparatus body shall be built of stainless steel and shall be designed exclusively for Fire Service use. The overall body width shall be 100 inches wide and shall be constructed in accordance with current NFPA requirements. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The body design shall be fully tested with proven engineering and test techniques such as finite element analysis, stress coating, and strain gauging. Engineering and test techniques shall have been performed with special attention given to fatigue life and structural integrity of compartments and body support system.

The apparatus body shall be designed with the use of parametric modeling engineering software to ensure proper design of panel cuts and alignment of holes in mating parts. The entire apparatus body shall be a precision laser machined, bolted construction, properly reinforced with integral flanges eliminating the need for additional structural shapes. Hose body fabrications shall be free of all internal projections which might injure personnel or fire hose.

The pump module is to be completely separate from the main body to prevent damage due to flexing.

MODULAR BODY REQUIREMENTS

The body shall be completely modular in design allowing transfer of body components to a new chassis in the event of an accident or wear. Body components shall be removable from chassis without cutting or bending. The modular design shall also facilitate ease of repair or replacement of major or minor body parts. The mounting of the apparatus body shall be separate and distinct from the water tank mounting and the pump module mounting.

All body panels are to be laser machined on a CAM controlled laser to ensure accuracy (+/- .010"). This shall greatly enhance assembly and matching of repair parts. The body compartment floors, rear walls and roof areas shall be constructed of 12-gauge austenitic stainless steel. The vertical front and rear

walls are designed with 14-gauge stainless steel. These front and rear walls are designed as a structural beam with the inclusion of the design encompassing a front and rear design that allows for installation of telescoping lights.

Interior and unexposed stainless steel panels shall be #4B finish to eliminate the need for high maintenance painted surfaces in the compartments. All exterior stainless steel panels shall have #4B finish.

The entire body shall be fabricated using precision holding fixtures to ensure accurate dimensions. Body front and rear vertical flanges shall be triple broken, providing a mounting area for rear hand rails. Major body components shall consist of right and left body sides, and rear facing compartments.

The front and rear vertical corners of the apparatus body shall be recessed to provide a mounting area for vertical hand rails and telescoping light poles. Two (2) handrails shall be provided at the left and right sides of the apparatus body mounted vertically. A full width handrail shall be mounted at the rear of the body below the hosebed.

COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have a bolt in 12-gauge stainless roof section for supporting roof loads of up to 500 pounds per square foot without permanent roof deformation. The stainless roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the stainless roof section.

REAR FRAME EXTENSION

The rear chassis frame extension system shall consist of a interwoven dual .625" thick steel drop frame extensions with a transverse 4" x 3" x .375" thick structural channel, and dual laminated .188" thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknuts with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.5" shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

BODY MOUNTING SYSTEM

The front body support system shall be an integral design with .250" thick steel deep section cross member across the top of the chassis frame. The deep section cross member shall be attached to the right side and the left side lower front compartment weldments with eight (8) grade 8; 3/8 inch diameter bolts on each side of the apparatus. The front cross member shall be attached to the chassis by means of an elastomer spring mounting system with limited travel.

The lower portion of this spring mounting system shall be an integral part of the pump module frame mounting system. This design allows for maximum chassis flexing without undue stress transfer to the apparatus body.

The right and left side rear compartments shall be attached to a stainless steel rear body support. The stainless steel support shall be attached to the chassis frame extensions by means of an elastomer spring mounting system to form a modular integral body support system.

The apparatus body shall not rest upon the chassis truck rails and must be separated entirely from the steel frame of the chassis to prevent galvanic action.

Loose fitting u-bolt body mounting systems are not acceptable due to the likeliness of the apparatus body shifting or becoming detached from the chassis upon rear end impact.

One (1)
32-02-9000

COMPARTMENT INTERIOR FINISH

For better interior visibility, to reflect light better, ease of maintenance and prevent the masking of poor welds and questionable workmanship the interior of the body compartments shall remain uncoated.

One (1)
32-05-0100

EXTERIOR ROOF FINISH

The top of the compartments shall be brushed stainless steel. The roof shall contain 'Not a Stepping Surface' labeling.

One (1)
46-18-1025

REAR TAILBOARD

A rear tailboard 18" deep shall be provided at the rear from "Laser Grip" stainless steel meeting NFPA 1901 step requirements. The tailboard shall provide protection for the side body compartments and shall provide mounting for the rear ICC marker lights. It shall be bolted to the rear support structure.

One (1)
40-01-2110

CHASSIS FRAME EXTENSIONS

There shall be a rear chassis drop frame extension to provide frame support for the rear of the apparatus body. This extension is to be bolted to the truck chassis as an integral part of the truck frame assembly and is to include rear tow eyes, crossmember and tailboard reinforcement.

One (1)
40-02-0200

COMPARTMENT DESIGN AND CONSTRUCTION

All compartments shall be manufactured from 12-gauge stainless steel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted together. Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall greatly enhance the strength and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

One (1)
40-02-0204

COMPARTMENT VENTILATION

Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

VENT FILTRATION

There shall be filters provided for compartments L1, L3, R1, R3 and RR1. The protective louver covering the filer shall be removable to allow for filter changing.

The filter shall be 100% virgin nylon fiber in an open web design that is USDA approved. The filter shall be chemically treated with Dimethyl Benzyl Ammonium Saccharinate to aid in the reduction of bacteria and fungi.

One (1)
30-06-0400

WATER TANK CAPACITY

The water tank shall be rectangular in shape and shall have a maximum capacity of 1020 US gallons.

One (1)
30-02-1000

TANK LID & FILL TOWER

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of 1/2” thick Polyprene & Mac226 and shall be a minimum dimension of 10”x 14” outer perimeter. The tower shall be located in the center front of the tank unless otherwise specified by the purchaser. The tower shall have a 1/4” thick removable Polyprene & Mac226; screen and a Polyprene & Mac226 hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum ID of 4” that is designed to run through the tank, and shall be piped behind the rear axle beneath the tank.

The tank cover shall be constructed of recessed 1/2” thick Polyprene & Mac226, stress relieved, UV stabilized material. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

One (1)
30-10-1400

The water tank manufacturer shall be either APR or UPF selected by the apparatus builder.

One (1)
30-12-2000

BODY MODULE CAPACITIES AND HOSEBED HEIGHT

The total capacity of the body module exterior compartments shall be 215 cubic feet.

The total capacity of the body hosebed shall be approximately 80 cubic feet.

The hosebed shall be approximately 63" from the bumper.

The body shall have an overall length of 164".

One (1)
42-20-0200

LADDER STORAGE - ON BEAM

The ladders shall be mounted on the right side of the body to the right of the water tank. The ladders shall be placed into the body from the rear of the apparatus sliding into the compartment on beam. A vertically hinged door shall be provided with a non-locking "D" ring latch.

The water tank shall have a storage opening for ladder storage inside the apparatus body. This compartment shall extend from the rear of the apparatus completely through to allow the ladders to extend into the pump house for storage. The floor of the ladder compartment shall be constructed of 1" thick polypropylene material with the top of the compartment constructed of 3/4" polypropylene material. The compartment shall have approximate dimensions of 30" high x 16" wide.

The compartment shall store one (1) 24' two-section ladder, one (1) 14' roof ladder, one (1) 10' folding ladder, one (1) 6' pike pole and one (1) 10' pike pole.

One (1)
72-04-0400

ROOF LADDER

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

One (1)
72-06-0400

ATTIC LADDER

One (1) 10' Duo-Safety model 585-A aluminum folding attic ladder shall be provided with the apparatus.

One (1)
72-08-0400

EXTENSION LADDER

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

One (1)
72-18-0900

PIKE POLE

One (1) 8' Akron IB-8-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1)
72-18-0900

PIKE POLE

One (1) 8' Akron IB-8-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1)
72-18-0700

PIKE POLE

One (1) 6' Akron IB-6-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1)
72-18-0700

PIKE POLE

One (1) 6' Akron IB-6-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1)
34-02-0450

APPARATUS BODY HOSEBED WITH 21-3/4" SIDES

The hosebed shall be constructed in such a manner that will prevent damage to fire hose. The hosebed shall comply with the current NFPA requirements. The interior of the hosebed shall be free of projections such as nuts, sharp edges or brackets that may damage hose. The hosebed and walls shall be manufactured from stainless steel. No exceptions to this requirement are allowed.

An aluminum extrusion shall be installed over the rear opening of the hosebed to protect the body from wear. The hosebed bottom shall be fitted with removable slatted, ribbed 6" heavy-duty extruded aluminum floorboards.

Three (3)
34-04-0600

ADJUSTABLE HOSE BED DIVIDERS

Three (3) adjustable hosebed dividers shall be provided. Each divider shall be fabricated from .250" thick smooth aluminum plate, 5052-H32 alloy. The rear end of each divider shall have a 3" radius corner and shall be sanded and deburred to prevent damage to hose.

There shall be two hand hold openings provided. One (1) at the rear in a vertical position and one (1) approximately 24 inches in from the rear in a horizontal position.

One (1)
34-06-0400

HOSEBED COVER

A black vinyl hosebed cover shall be provided and designed to cover the entire main hosebed area. The cover shall be installed with "stretch cord type" fasteners along each side of the hosebed. A sand filled flap shall be incorporated into the rear edge of the cover.

The hosebed cover rear flap shall have a positive locking device to meet the requirements of NFPA.

One (1)
46-33-0900

BACKBOARD STORAGE COMPARTMENT

A storage compartment shall be furnished in the hosebed, attached to the side of one of the hosebed dividers for the storage of one (1) backboard.

The compartment shall have interior dimensions of 4" x 17" x 75" deep and shall be enclosed and shall be provided with an opening at the rear of the apparatus. The opening shall be provided with a strap to secure the backboard.

One (1)
40-12-1000

LEFT SIDE COMPARTMENT DIMENSIONS

FORWARD OF WHEEL WELL

There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 56" wide x 63" high x 24" deep.

ABOVE WHEEL WELL

There shall be one (1) high side compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 24" deep.

REAR OF WHEEL WELL

There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 24" deep.

One (1)
40-15-0160

ROLLUP DOOR CONSTRUCTION - LEFT SIDE

All left side compartments shall be provided with Gortite roll up doors. The roll up doors shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

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

One (1)
40-16-0400

The left side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

Three (3)
46-08-1200

ROLLUP DOOR SHIELD

An aluminum door shield shall be provided in three (3) exterior body compartments to protect the roll up door from accidental damage when loading or unloading equipment while the door is rolled up.

One (1)
41-00-0400

FENDER SIDE SKIRTS

There shall be stainless steel fender side skirts located in the area of the rear wheels. The design of the fender sides shall be a minimal length to provide maximum compartment space in the apparatus.

One (1)
46-02-0200

FUEL FILL - SIDE BODY

The fuel fill shall be located in the rear fender area on the left side of the apparatus body. The spring loaded fuel fill door shall have "Diesel Fuel" laser cut in the face of the door. There shall be a vent line from the fuel tank to beneath the fuel cap to aid in fueling of the truck.

One (1)
46-06-0400

BODY FENDERS - POLISHED

The apparatus body fenders shall be made from 16 gauge polished stainless steel and shall be rolled, die stamped and fully removable. The stainless steel fenders and stainless fender liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.

One (1)
46-08-0200

REAR AXLE MUD FLAPS

Two (2) black, anti-sail, mud flaps shall be mounted behind the rear wheels.

One (1)
46-28-0407

SCBA BOTTLE COMPARTMENTS

Seven (7) SCBA bottle tube compartments shall be provided, three (3) in the left side rear wheel well area and four (4) in the right side rear wheel area. Each compartment shall be constructed of gray roto molded storage compartment to provide SCBA scuff protection. A door seal shall be provided at the perimeter of the SCBA compartment. The doors shall be brushed stainless steel with a push button trigger latch.

One (1)
46-28-0680

SCBA BOTTLE RETENTION STRAP

One (1) one-inch (1") wide loop of red webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in the event the door is not latched for travel. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

One (1)
42-02-1800

RIGHT SIDE COMPARTMENT DIMENSIONS

FORWARD OF WHEEL WELL

There shall be one (1) rescue style, full height, and split depth compartment ahead of the rear wheels. It shall have approximate dimensions of 56" wide x 63" high x 12" deep in the upper section and 24" deep in the lower section.

ABOVE WHEEL WELL

There shall be one (1) high side reduced depth compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 12" deep.

REAR OF WHEEL WELL

There shall be one (1) rescue style, full height, and split depth compartment behind the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 12" deep in the upper section and 24" deep in the lower section.

One (1)
42-07-0160

ROLLUP DOOR CONSTRUCTION - RIGHT SIDE

All right side compartments shall be provided with Gortite roll up doors. The roll up doors shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

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

One (1)
42-08-0400

The right side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

Three (3)
46-08-1200

ROLLUP DOOR SHIELD

An aluminum door shield shall be provided in three (3) exterior body compartments to protect the roll up door from accidental damage when loading or unloading equipment while the door is rolled up.

One (1)
42-12-0400

REAR COMPARTMENT DIMENSIONS

There shall be one (1) full height compartment at the rear of the body. It shall have approximate dimensions of 48" wide x 62" high x 22" deep.

One (1)
42-23-0200

ROLLUP DOOR CONSTRUCTION - REAR

The rear compartment shall be provided with a Gortite roll up door that shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

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

filled nylon.

One (1)
42-26-0200

The rear door latch shall be a non-locking stainless steel lift bar and shall be provided with a magnetic door ajar switch system.

One (1)
46-08-1200

ROLLUP DOOR SHIELD

An aluminum door shield shall be provided in one (1) exterior body compartments to protect the roll up door from accidental damage when loading or unloading equipment while the door is rolled up.

One (1)
84-04-5050

REAR BODY REFLECTIVE CHEVRON STRIPING

The rear-facing vertical surfaces of the rear taillight panels and the rear body inset area beside the full height rear door(s), visible from the rear of the apparatus, including the rear compartment door(s), shall be equipped with six (6) inch wide retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees.

One (1)
84-04-8002

Each stripe in the chevron shall be a single color alternating between red (3M #-82) and yellow (3M # - 81).

One (1)
46-04-0640

BODY RUBRAIL - POLISHED STAINLESS STEEL

The apparatus body shall have a bolt on extruded, polished stainless steel rub rail affixed to the side beneath each door area. The rub rail shall provide additional strength and protection and shall be constructed of 3/8" x 1-1/2" stainless steel fastened with stainless steel fasteners. Each rub rail shall be attached to the apparatus body with standoff spacers made from 1" diameter UHMW Polyethylene bar stock.

One (1)
46-06-0462

STAINLESS STEEL APPARATUS BODY PAINTED

The following apparatus body components shall be painted job color.

One (1)
46-06-0602

The rear wheel fender panels

One (1)
46-06-0604

The front body corner panels

One (1)
46-06-0606

The rear body corner panels

One (1)
46-06-0610

The exterior surface of the hosebed side walls / coffin compartment

One (1)
46-06-0612

The exterior surface of the hosebed / coffin compartment front wall

One (1)
46-06-0616

The area between the doors on the side compartments

One (1)
90-06-1000

APPARATUS PAINT WARRANTY

The manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built apparatus for a period of one hundred twenty (120) months. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

One (1)
46-10-0200

EXTERIOR COMPARTMENT LIGHTING

A minimum of two (2) compartment lights shall be provided for each body compartment. No exceptions to this requirement. Each body door shall have an automatic compartment light switch.

One (1)
46-10-0700

EXTERIOR COMPARTMENT LIGHTING

Two (2) LED strip lights shall be provided for each body compartment in addition to the standard compartment lights. Each body door shall have an automatic compartment light switch.

One (1)
46-12-0225

REAR WORK LIGHTS

Two (2) recess mounted LED area work lamps shall be provided above the tailboard, one (1) each side on the inner face of the beavertail. The lights shall be shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

One (1)
46-14-0225

UNDERBODY LIGHTING

Underbody ground lights shall be provided under the apparatus body as required by current NFPA 1901. Four (4) Truck-Lite model #44 LED ground lights shall be provided at the rear of the apparatus body, two (2) each side, to illuminate under the rear compartments.

There shall also be two (2) model #44 LED ground lights provided at the outer front corners of the apparatus body, one (1) each side, to illuminate the area under the forward compartments and pump panel areas. All underbody ground lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

One (1)
46-16-0300

FOLDING STEPS

Folding steps shall be provided on the front and rear of the apparatus body. Steps shall be provided and in installed per NFPA requirements.

Eight (8)
46-18-0710

The folding step(s) shall include an integrated LED light beneath each step. This light shall illuminate when the apparatus ground lights are activated. The bottom of the step and step mounting shall include white reflective material to aide in locating the step when the vehicle ground lights are not activated.

One (1)
46-20-0400

INTERMEDIATE REAR STEPS - LOWER

Two (2) rear corner steps, one (1) each side, shall be located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

One (1)
46-26-0425

REAR HANDRAILS

Two (2) ribbed, solid stock 1-1/4" diameter, aluminum handrails with chrome plated stanchions shall be supplied and installed at rear of the apparatus body. There shall be one (1) 24" long vertical handrail installed on the left inside of the rear area of the body and one (1) 69" long handrail installed horizontally along the upper edge of the beavertail area.

One (1)
58-02-0100

HOSEBED FLOODLIGHT

One (1) Unity AG hosebed floodlight shall be mounted at the front right corner of the hosebed. The light shall be controlled from a water proof switch on the lamp head.

One (1)
58-02-0105

REMOTE SWITCH FOR FRONT HOSEBED FLOODLIGHT

A remote 12-volt, water proof switch shall be located on the pump operator's panel to control the front hosebed floodlight.

One (1)
58-09-3012

BODY SIDE SCENE LIGHTS

There shall be body side scene lights installed as high as possible and spread out as far as possible on both sides of the apparatus body.

Four (4)
58-09-5290

There shall be Four (4) Whelen Pioneer Series model PFA1 LED floodlight lamphead(s) provided.

Each lamp head shall have a two panel LED bulb which will draw 3.0 amps.

Four (4)
58-09-5310

The scene light(s) shall be mounted with a stainless steel housing. The housing shall protect the light from the top and the two sides and shall incorporate a pivot mounting to allow the light to be adjusted inside the housing.

One (1)
58-09-7002

The scene lights shall be operated by a switch located in the driver's area of the cab.

One (1)
58-09-7110

The scene lights shall be operated by a switch located on the operator's area of the pump panel.

One (1)
58-09-4012

BODY REAR SCENE LIGHTS

There shall be rear scene lights installed as high as possible on both sides of the rear of the apparatus body.

Two (2)
58-09-5290

There shall be Two (2) Whelen Pioneer Series model PFA1 LED floodlight lamphead(s) provided.

Each lamp head shall have a two panel LED bulb which will draw 3.0 amps.

Two (2)
58-09-5310

The scene light(s) shall be mounted with a stainless steel housing. The housing shall protect the light from the top and the two sides and shall incorporate a pivot mounting to allow the light to be adjusted inside the housing.

One (1)
58-09-6040

The rear scene lights shall be operated by a switch located beneath the left rear step. If the scene light is left in the 'ON' position the lights shall automatically turn off when the truck is parking brake is released.

There shall also be a switch in the driver's area to turn on the rear scene lights.

Additionally, the rear scene lights shall come on to supplement the back-up lights when the transmission is placed into reverse.

One (1)
58-09-7110

The scene lights shall be operated by a switch located on the operator's area of the pump panel.

One (1)
58-10-8008

FORWARD FACING BROW LIGHT

One (1) brow light shall be provided and mounted centered on the leading edge of the cab roof facing forward.

One (1)
58-10-8430

There shall be One (1) Whelen Pioneer Series model PFP2 LED floodlight roof mount lamphead(s) provided. The mounting bracket shall attach to the lighthead chosen for the mounting position. Wiring shall exit from a weatherproof strain relief on the lamphead.

The lamp head shall have a two panel LED bulb which will draw 13.0 amps and generate 10000 lumens.

One (1)
58-10-8900

The brow light shall have a white housing

One (1)
58-18-0102

One (1) 12-volt, switch(es) shall be located in the cab switch panel. The switch(es) shall control the 12-volt quartz lighting fixture(s) as selected.

One (1)

58-10-8012

SIDE FACING CAB ROOF MOUNTED QUARTZ LIGHTS

One (1) light shall be mounted on the cab roof over the driver's door facing outward.

One (1) light shall be mounted on the cab roof over the officer's door facing outward.

Two (2)
58-10-8430

There shall be Two (2) Whelen Pioneer Series model PFP2 LED floodlight roof mount lamphead(s) provided. The mounting bracket shall attach to the lighthead chosen for the mounting position. Wiring shall exit from a weatherproof strain relief on the lamphead.

The lamp head shall have a two panel LED bulb which will draw 13.0 amps and generate 10000 lumens.

Two (2)
58-10-8900

The brow light shall have a white housing

Two (2)
58-18-0102

Two (2) 12-volt, switch(es) shall be located in the cab switch panel. The switch(es) shall control the 12-volt quartz lighting fixture(s) as selected.

Two (2)
48-02-0600

DEEP ALUMINUM SHELVES - ADJUSTABLE

Two (2) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum material thickness of .190" up to 30" in length. Each shelf shall be adjustable in height and held in place by four (4) extruded uprights.

Two (2)
48-02-1000

Each adjustable shelf shall be installed as follows:

1. Two (2) in exterior compartment RR1

Four (4)
48-03-0600

SHALLOW ALUMINUM SHELVES - ADJUSTABLE

Four (4) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum material thickness of .190" up to 30" in length. Each shelf shall be adjustable in height and held in place by four (4) extruded uprights.

Four (4)
48-03-1000

Each adjustable shelf shall be installed in the upper portion of the compartments as follows:

1. One (1) each in exterior compartment L1, L3, R1 and R3.

One (1)
48-04-2200

ALUMINUM TRAY - PULL OUT

One (1) heavy duty pullout tray shall be installed on the floor of the compartment and shall be equipped with Grant slides and a gas shock to hold the tray in both the in and out positions and shall be made from .190" aluminum with a maximum capacity of 500 pounds.

One (1)
48-04-2210

The heavy duty pullout tray shall be installed in L1, L2, R1, R2 & RR1 compartments.

Two (2)
48-14-0600

ALUMINUM TOOL BOARDS

The upper half of the rear wall of two (2) exterior compartments shall be covered with FoxTrax aluminum extrusion tool mounting board.

Two (2)
48-14-1000

Tool mounting boards shall be installed on the upper back wall of L2, R2 compartments.

One (1)
48-24-0200

TOOL BOX

A 20" long by 8" wide stainless steel toolbox with a top removable tray shall be provided with the apparatus. The tool box shall be supplied with a logo of the truck manufacturer applied to the lower left front corner of the box.

One (1)
50-02-0200

APPARATUS BODY ELECTRICAL SYSTEM

All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-volt negative ground system.

All 12-volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect.

The apparatus shall be equipped with a Class1 Es-Key Management System for complete control of the electrical system devices.

The right rear compartment shall house a relay based Power Distribution Module (PDM). The PDM shall contain 12 standard automotive relays. Each relay's output shall be monitored by the Es-Key system to provide true on/off feedback. Each output shall be capable of handling up to 30 amps and be protected by an automatic circuit breaker. The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service.

All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

One (1)
55-02-1002

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield. These lights are to be mounted in a chrome flange.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted

ahead of the front door.

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

One (1)
55-02-2000

APPARATUS ICC MARKER LIGHTING

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the forward body compartment. These lights are to be mounted in a chrome flange.

Five (5) red LED clearance lights shall be supplied, mounted in the rear of the apparatus.

Two (2) red LED clearance lights shall be supplied, mounted facing the side of the apparatus.

ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

One (1)
55-03-0100

HEADLIGHTS

Four (4) rectangular halogen headlights shall be supplied.

When the parking brake is released and the master battery switch is in the on position, the head lamps shall be illuminated to 80% brilliance.

One (1)
55-04-0700

TURN SIGNALS

Two (2) rectangular Federal Signal, model QL64Z-TURN, LED turn signal lamps shall be mounted outboard of the front headlights on each side. These lights shall be amber in color.

One (1)
55-05-0120

SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the front wheel well area. The lights shall be mounted in a chrome flange.

One (1)
55-06-0440

REAR STOP/TAIL/TURN/BACKUP LIGHTS

The rear of the apparatus shall be equipped with Whelen 600 Series lights. The top light in the assembly shall be a red LED stop/tail light, Whelen model 60BBTC. The middle light set shall be an amber LED lamp with a populated arrow shape, Whelen model 60A00TAR and the lower lights shall be clear Halogen backup lights, Whelen model 60J000CR.

A one-piece bright finished trim shall be mounted around the rear stop/tail/turn and backup lights on each side of the apparatus.

One (1)
55-05-0220

SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the rear wheel well area. The lights shall be mounted in a chrome flange.

One (1)
55-06-0480

BACK-UP ALARM

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit.

One (1)
55-06-1000

One (1) license plate mounting and LED light shall be provided. The light and bracket shall be located on the rear of the apparatus.

One (1)
57-04-3304

ROOF MOUNTED LIGHTBAR

A Whelen Freedom model FN72QLED, 72" light bar system shall be supplied and permanently mounted on the cab roof, as far forward as possible. This light bar system shall be supplied with twelve (12) LED elements, ten (10) red and two (2) clear.

This light bar fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the “Blocking Right of Way” mode.

One (1)
57-20-3302

LOW LEVEL WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the front of the chassis above the headlights located in the inner position on each side.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left light head.

These two (2) lights fulfill the requirements for Lower Zone A lower level warning devices.

One (1)
57-03-1000

Both warning light lenses shall be red in color.

One (1)
57-30-3304

FRONT INTERSECTION LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the front bumper/gravelshield with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and

left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

One (1)
57-03-1000

Both warning light lenses shall be red in color.

One (1)
57-32-3304

FRONT INTERSECTION LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the cab over the front wheel with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

One (1)
57-03-1000

Both warning light lenses shall be red in color.

One (1)
57-34-3304

BODY SIDE WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the body over the rear wheel with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

One (1)
57-03-1000

Both warning light lenses shall be red in color.

One (1)
57-40-3306

REAR UPPER LEVEL WARNING LIGHTS

Two (2) Whelen Super-LED warning lights, model B6MM LED beacons, shall be mounted on the rear of the apparatus one on each side of the hosebed on polished stainless steel stanchions.

These two (2) lights fulfill the requirements for Upper Zones B, C & D upper level warning devices.

The upper beacon portion of the light shall be red in color.

The lower directional linear Super-LED rear facing portion of the light shall have,

One (1)
57-03-3010

The driver's side lens shall be red in color and the officer's side amber in color.

One (1)
57-42-3304

REAR LOWER LEVEL WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the rear of the apparatus below the taillights at the lower outermost corners in vertical position with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Upper Zone C lower level warning devices.

One (1)
57-03-1000

Both warning light lenses shall be red in color.

One (1)
57-44-3301

LED TRAFFIC ADVISOR

One (1) amber LED Whelen traffic advisor, model TAM-85, with cable, shall be mounted on the upper rear of the apparatus. The device shall consist of eight Super-LED heads.

The signal patterns of the device shall be progressive left, progressive right, center out, and emergency “All Flash.”

The switch control box is to be mounted in the cab allowing for easy operation by the driver.

One (1)
58-24-0600

HOSEBED SPOTLIGHTS

Two (2) 12-volt, Unity model AG-R-H7635, 50 watt, 160,000 candlepower, clear halogen spotlights shall be provided to illuminate the apparatus hosebed. The lights shall be located one (1) each side at the rear of the hosebed. The beam deck lights shall have an "E-Z Grip" knob and shall rotate 360-degrees horizontally and 180-degrees vertically. The lights shall be controlled by a switch located on the light head and the lights shall illuminate only when the parking brake is applied.

One (1)
70-02-0400

IDENTIFICATION AND SAFETY LABELS

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.

9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

A permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

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

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operators position is valved, it shall be provided with a permanent label with language per NFPA-1901, current edition.

One (1)
70-24-0400

WHEEL CHOCKS

One (1) pair of Zico model #SAC-44 heavy duty, folding aluminum wheel chocks shall be provided with the apparatus. Slide-out style mounting brackets shall be provided and mounted on the left side of the apparatus, below the front body compartment.

One (1)
70-26-0600

SCBA BRACKETS

One (1) Zico SCBA mounting brackets with a positive holding strap shall be provided in apparatus body exterior compartments.

One (1)
70-26-0810

The SCBA brackets shall be installed on the back wall of _____ compartment.

One (1)
84-02-2500

REFLECTIVE SAFETY STRIPE

A 1" x 6" x 1" wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle. The striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear, and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

One (1)
84-04-1210

BODY STRIPE UP AND OVER REAR AXLE

The stripe on each side of the apparatus shall run straight back to the body, then angle up at approximately a 45 degree angle on the front body door and then run straight back from there to the rear

of the body.

One (1)
84-04-3010

REFLECTIVE STRIPE COLOR

The apparatus body striping shall be white reflective.

One (1)
84-04-3140

The smaller accent stripe(s) shall be black reflective.

One (1)
84-05-0012

LETTERING

There shall be one (1) letters applied to the apparatus as directed by the fire department at the pre-construction meeting.

One (1)
84-99-9999

AMERICAN FLAG GRILLE

An American Flag design will be applied to the front grille.

One (1)
86-02-0100

MISCELLANEOUS FASTENERS

One (1) bag of assorted fasteners (bolts, nuts, screws and washers) of the type used in construction of the apparatus shall be provided as follows.

Part Number	Description	Quantity	
82809-60	1/4-20 UNC x 3/4" LG. S/S Phillips Pan Head Machine Screw	25	0.07
82809-57	1/4 UNC Hex Head Locknut	25	0.04
82809-7	1/4" Stainless Steel Flat Washer--Reg.	50	0.01
82809-98	#10-32 UNF x 3/4" LG. Bright S.S. Pan Head Machine Screw	25	0.03
82809-37	#10 Stainless Steel Flat Washer 7/16 O.D. x 3/16 1.D. x 1/64 THK.	50	0.005
82809-32	1/4-28 UNF x 3/4" LG. Stainless Steel Hex Head Tapping Screw	25	0.08
82809-85	5/16-18 UNC x 1" LG. Cap Screw	25	0.09
82809-86	5/16-18 UNC Nylon Locknut	25	0.05

82809-82	5/16 Flat Washer	50	0.02
82809-95	#10-32 UNF x 1/2" Bright Stainless Steel Cross Recess Truss Head Self-Tap Point Style Type "F"	25	0.06
82809-131	#10-32 UNF x 3/4" LG. Bright S.S. C.R. Truss HD. Self-Tap Point Style Type "F"	25	0.06
89500-2	#10 x 5/8 Sheet Metal Screw Type A, Phillips Pan Head	25	0.02
89500-4	#8 x 5/8 Sheet Metal Screw Type A Phillips Pan Head	25	0.01
89500-7	#8 x .75 Tapping Screw w/ Type A Point Style, Phillips Pan Head	25	0.009
89500-10	#8 x 1" LG Phillips Pan Head Sheet Metal Screw	25	0.01
89500-1	AU-VE-CO #11788 #8 x 3/4 Phillips Head Sems Finishing Screw	25	0.009
86161-8	Small Gray Trim Button	12	0.16
86161-5	Small Black Trim Button	12	0.16
86161-1	Large Black Trim Button	12	0.16
86161-4	Large Gray Trim Button	12	0.16

Two (2)
86-99-9990

KEY FIRE HOSE

Two (2) Key Fire Hose, 1-3/4" x 10', rubber covered, 800# test hose, red in color will be provided.

One (1)
86-99-9991

DISCHARGE REDUCER

One (1) chrome plated, 1-1/2" NSTF to 1" NSTM rocker lug reducer shall be furnished.

One (1)
90-03-1000

WATER TANK WARRANTY

The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.

If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.

The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

One (1)
90-04-1000

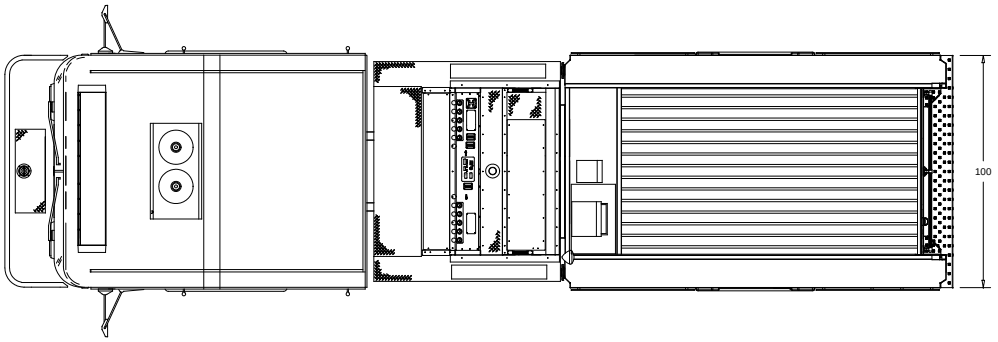
10 YEAR BODY STRUCTURALWARRANTY

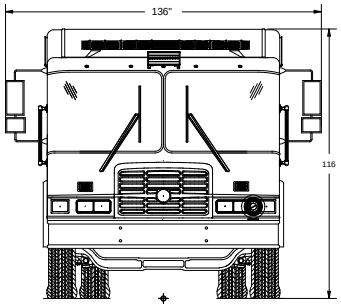
The manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built apparatus body for a period of one hundred twenty (120) months. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

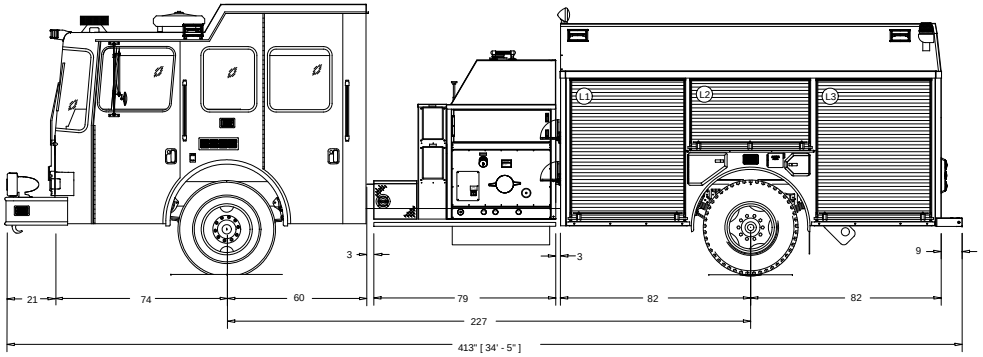
One (1)
90-05-1000

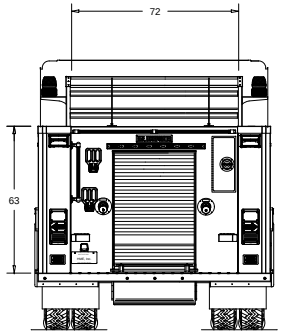
STAINLESS PIPING WARRANTY

The bidder shall warrant that all stainless steel piping used in the construction of the fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of ten (10) years from the date of delivery to the original user-purchaser, whichever occurs first.

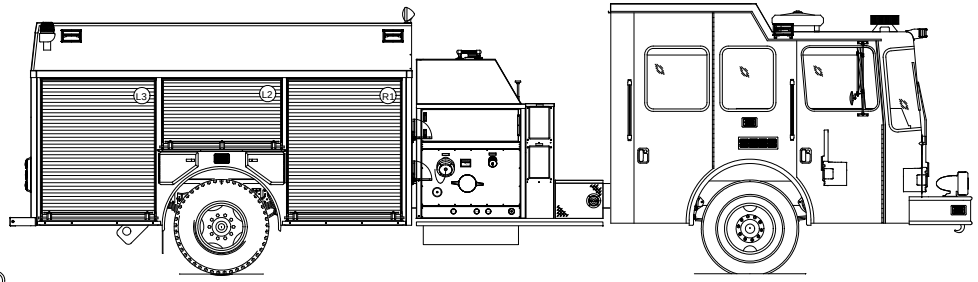








NOT ALL OPTIONS SHOWN



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HME AHRENS-FOX

1950 BYRON CENTER AVE.
WYOMING, MI. 49509

NAME
BEDFORD TWP FIRE DEPT

DRAWN	DATE	APPROVED	DRAWING FILE
JFDM	8-24-13		

THIRD ANGLE PROJECTION	SIZE	NUMBER	SCALE
			SHEET OF