HME, Inc.

One (1) == OEM Chassis Only - Boiler Plate - 7.004 05/17/24 ==

S One (1) Wheelbase Requirement {MUST Edit Spec} OEM Chassis
00-00-3320

MAXIMUM WHEELBASE REQUIREMENT

The apparatus specified shall be constructed as detailed and shall have a wheelbase of 198 inches.

SHOP NOTE

198"

One (1) Maximum Overall Width Requirement (Max OAW) = DOT 102.36"
00-00-3410

MAXIMUM OVERALL WIDTH

The apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Overall Width of 102.36 inches to meet Federal Highway Administration width limits for commercial motor vehicles.

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

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

One (1) NFPA Angle of Approach Requirement (8 degrees)
00-00-3505

ANGLE OF APPROACH REQUIREMENT

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by (NFPA 1900 current edition) Standard for Automotive Fire Apparatus.

S One (1) Rear Frame Cut-Off Dimension ({MUST Edit Spec} OEM Chassis
00-00-3680

REAR FRAME CUT-OFF REQUIREMENT

The apparatus specified shall be constructed as detailed and shall have a rear frame cut-off dimension of 58.25 inches.

This measurement shall be from the center of the rear axle to the end of the chassis frame (A/E).

SHOP NOTE

58.25"

S One (1) Estimated Weight Excluding Chassis - MUST EDIT - OEM Add Info
00-00-3890

HME, Inc.

ESTIMATED WEIGHT

The apparatus body (including water plus equipment) shall have an estimated in-service weight of approximately 19740 pounds. This estimate shall only exclude the chassis weight.

SHOP NOTE

Approx. 19,740 lbs.

One (1) NFPA-1900, Current Edition - Incomplete Chassis
00-10-1810

NFPA 1900

The National Fire Protection Association "Standard for Automotive Fire Apparatus", current Edition, is hereby adopted and made a part of these specifications for the componentry supplied in the incomplete chassis.

One (1) Manuals and Document Information (Proposal) - OEM Chassis Only
00-15-0080

MANUALS AND DOCUMENT INFORMATION

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

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

One (1) Supplied Component Information (Proposal) see NFPA - OEM Chassis Only
00-15-0180

COMPONENT INFORMATION

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

- Chassis make, model, and serial number
- GAWR of front and rear axles
- Front tire size and total rated capacity in kilograms
- Rear tire size and total rated capacity in kilograms
- Chassis only weight distribution in kilograms
- Engine make, model, serial number, rated horsepower, related speed and no load governed speed
- Type of fuel and fuel tank capacity
- Chassis Electrical system voltage and alternator output in amps
- Battery make and model, capacity in CCA
- Paint numbers
- Transmission make, model, and type

One (1) One (1) Electronic/One (1) Hard Copy Operator's Manual w/ Parts List - OEM

HME, Inc.

00-15-0260

ELECTRONIC & HARD COPY OPERATOR'S MANUAL

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

The following information will be included:

- Chassis Operator's Manual
- Chassis Construction Bill of Material Parts List

Electrical System:

- Complete wiring schematics for the chassis.
- Diagrams of the chassis showing the wiring harness routing within the chassis. 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 chassis shall be provided with hyperlinks to the connectors for pin designations and to the chassis drawings for harness location within the chassis.
- Chassis as built wiring information

Air System:

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

One (1) Warning and Information Labels - OEM Chassis Only
00-15-0380

WARNING AND INFORMATION LABELS

All warning and informational labels (non-vendor specific) shall be provided in compliance with current edition (NFPA 1900), Standard for Automotive Fire Apparatus, and installed in the appropriate locations to alert the operator of potential hazards and operating instructions.

One (1) Apparatus Fluid Label - Pumper
00-15-0510

FLUID REQUIRED LABEL

There shall be a lubrication plate(s) mounted inside the cab listing the type and grade of lubrication used on the apparatus and chassis. At a minimum the following information shall be listed:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid (if equipped)
- Front Tire Cold Pressure

- Rear Tire Cold Pressure
- Maximum Tire Speed Rating

One (1) Apparatus Seating Label - Pumper
00-15-0605

CHASSIS SEATING REQUIRED LABELING

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

The label shall read the following:

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

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per current edition (NFPA 1900) Standard for Automotive Fire Apparatus. It shall be located in an area visible to the driver.

One (1) Cab Helmet Warning Label - Pumper
00-15-0620

CAB HELMET WARNING LABEL

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

The label shall indicate the following specified information.

“DO NOT WEAR HELMET WHILE SEATED”

One (1) Cab Structural Warranty - 10 Years (Proposal) {Custom Chassis}
00-25-0405

CAB STRUCTURAL WARRANTY

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

One (1) Cab Paint Warranty - Prorated - OEM Chassis Only {Custom Chassis}
00-25-0680

PAINT WARRANTY

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

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

HME, Inc.

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

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

One (1) Paint Warranty - 5 Years
00-25-0805

PAINT WARRANTY - 5 YEARS

The Paint Warranty shall be provided for a period of five (5) years.

One (1) Chassis Frame Warranty - Lifetime (Proposal) {Custom Chassis}
00-25-1205

CHASSIS FRAME RAILS WARRANTY

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

One (1) Engine Warranty - 5 Yr/100k miles (Proposal) {Custom Chassis}
00-25-1405

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever comes first by the engine manufacturer, Cummins.

One (1) Transmission Warranty - 5 Years (Proposal) {Custom Chassis}
00-25-1505

TRANSMISSION WARRANTY

The Allison EVS transmission engine shall be warranted for a period of five (5) years by the transmission manufacturer, Allison.

One (1) Steering Unit Warranty (Proposal) {Custom Chassis}
00-25-2705

STEERING UNIT WARRANTY

The steering unit shall be warranted by Sheppard with the coverage that applies to the configuration specified.

One (1) NO Delivery Charge - OEM Pick-Up At HME
00-70-0010

HME, Inc.

NO TRANSPORTATION CHARGES

The chassis shall be picked up by the OEM.

S One (1) Paint Codes - Cab - OEM Chassis Only {EDIT Specs & Add Info}
00-50-0080

PAINT CODES

Paint Information:

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

CAB EXTERIOR

Single Color:
Primary color: RED TINTED M3
Primary paint code: DBC-08-904799

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

Paint Break Line (Scheme #): N/A

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

RIMS

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

One (1) == OEM 1871 L9 Engines Cab & Chassis - 7.004 05/17/24 ==

One (1) Custom Firetruck Chassis
00-J0-2000

CUSTOM FIRETRUCK CHASSIS

The chassis shall be designed and manufactured by a custom chassis manufacturer and shall be designed and constructed specifically for heavy duty fire service use, with adequate strength and capacity for all components as detailed within these specifications.

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

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

One (1) Single Frame Rails {WHEELBASE > 209" SELECT DOUBLE FRAME}
01-G0-1100

CHASSIS FRAME - SINGLE FRAME

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

The frame side rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 18.34 cubic inches calculated by using the square corner shape method. The resulting frame rail resistance to bending moment shall be 2,017,400 inches per pound per rail.

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

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

One (1) Frame Rail Finish - Painted
01-I0-1000

FRAME RAIL FINISH

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

One (1) Black Gloss Enamel Painted Frame
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 ensure 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) Cab Main Frame Crossmember
01-J0-4000

CAB MAIN FRAME CROSSMEMBER

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

One (1) Front Axle 19,000# - Hendrickson STEERTEC NXT - CORE {X12/X15 REQ 20k Min}
07-A0-1110

FRONT AXLE

The front axle shall be a Hendrickson STEERTEK™ NXT with an 19,000 lb. capacity.

One (1) 45° Cramp Angle
07-AC-4500

CRAMP ANGLE

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

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

One (1) Oil Seals - Front Axle - Factory Premium
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) Disc Brakes - Front Axle - EX-225
07-C0-0210

FRONT AXLE DISC BRAKES

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

One (1) Front Suspension 19,000# - Hendrickson STEERTEK NXT
07-R0-2010

FRONT AXLE / SUSPENSION, STEERTEK™ NXT (19k GAWR)

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

This advanced suspension integration uses parabolic springs to increase wheel travel and lower spring rate for improved ride quality, and proprietary threaded pin bushings to increase roll stiffness. The rigid axle beam has a box-shaped cross section to resist horizontal, vertical, and twisting forces more

effectively than I-beam axles. Passive hydraulic dampers are custom tuned for parabolic leaf springs to achieve the ultimate ride and handling. Progressive-rated bump stops handle high dynamic loads without harshness.

This front axle and suspension system shall be designed for heavy duty custom fire apparatus with a maximum capacity of 19,000 lbs.

One (1) Shock Absorbers - Front Axle
07-RS-0105

SHOCK ABSORBERS

Double acting hydraulic shock absorbers are to be installed.

One (1) Steering - 18,800# - Sheppard Single Gear
07-Y0-0020

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.

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

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

One (1) Goodyear 315/80R22.5 (L) Front - Workhorse MSA (Mud/Snow) - 20,400#-68mph
10-GF-0230

FRONT TIRES

The front tires shall be Goodyear 315/80R22.5 (L) tubeless radial WORKHORSE MSA high capacity mud/snow tread.

The front tire stamped load capacity shall be 120,400 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

One (1) Aluminum Wheels - Front - (No Black Option)
10-W0-0102

ALUMINUM FRONT WHEELS

Polished aluminum wheels shall be supplied and installed on the front axle.

Two (2) Stainless 'Baby Moon' Caps & Nutcovers (Front Wheels)
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) Single Rear Axle 31,000# - Meritor RS-30-185, Heavy Duty Casting - CORE
08-AS-1090

SINGLE REAR AXLE

The rear axle shall be a MERITOR model "RS-30-185" (Heavy Duty) with a 31,000# capacity for the fire service.

One (1) 185 Series Differential - Single Axle
08-AV-F185

MERITOR DIFFERENTIAL

The rear axle shall contain a Meritor 185 Series differential with a 19.625 inch diameter ring gear utilizing hypoid-Generoid gearing and 2.25 inch diameter axle shafts.

One (1) Axle Lube - Non-Synthetic
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) Magnetic Drain Plug - Single Rear Axle
08-AV-T020

AXLE HOUSING DRAIN PLUG

A magnetic drain plug shall be installed in the bottom of the single rear axle housing.

One (1) Oil Seals - Rear Axle - Factory Premium
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) S-Cam Brakes - Single Rear Axle
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 65 - 68 MPH

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-1110 NFPA Vehicle Top Speed Statement (Revised 1/2/2024)

NFPA TOP SPEED STATEMENT

NFPA-1900, Current Edition - The maximum top speed of fire apparatus with a GVWR over 33,000 lb 14,968 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-1900, Current Edition - 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-1900 and the top speed that will be achieved with the finished apparatus.

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

One (1) 08-R0-0110 Single Axle Suspension - 31,000# - Spring

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 31,000 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.

HME, Inc.

One (1) Air System - Color Coded Nylon Air Lines - Single Axle - CORE
09-A0-10WF

AIR SYSTEM

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

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

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

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

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

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

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

One (1) Bendix AD-9 Air Dryer
09-A0-1204

AIR DRYER

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

The air dryer shall have a spin on desiccant cartridge.

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

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

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

One (1) Automatic Moisture Ejectors - All Air Reservoirs
09-D0-0106

AUTOMATIC MOISTURE EJECTORS

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

One (1) ABS Brake System - 4 Wheel - Meritor/Wabco
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) ABS Mud & Snow Selector Switch
09-LB-1110

MUD/SNOW SWITCH

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

One (1) Stability Enhancement System - 4 Wheel - Meritor/Wabco {SEE Eng Note}
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 current edition (NFPA 1900) Standard for Automotive Fire Apparatus. 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) Goodyear 315/80R22.5 (L) Rear - Workhorse MSA (Mud/Snow) - 36,360# - 68mph
10-GR-0235

REAR TIRES

The rear tires shall be Goodyear 315/80R22.5 (L) tubeless radial WORKHORSE MSA high capacity, mud & snow tread.

The rear tire stamped load capacity shall be 36,360 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

One (1) Inner and Outer Rear - SA - Aluminum Wheels - (No Black Option)
10-W0-3002

ALUMINUM WHEELS

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

Two (2) Stainless "Lincoln Hat" Hub & Nut Covers (Rear Wheels)
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) Tire Pressure Monitoring Device - 2 Axles (Front & Rear) - LED Alert
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 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) Axle & Chassis Laser Alignment
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 ensure that the vehicle shall steer in a straight line. Toe in measurements are set to a positive 2.50 millimeters total, giving the vehicle 1.25 millimeters from side to side.

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

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

One (1) Cummins L9 - 450 HP - 1400 Radiator {Short Engine Enclosure}
13-EU-6425

DIESEL ENGINE

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

MODEL:	L9-450
NUMBER OF CYLINDERS:	Six
BORE AND STROKE:	4.49 in (114 mm) x 5.69 in (145 mm)
DISPLACEMENT:	543 cu. in. (8.9L)
MAX HP:	450 hp (336 kW) @ 2100 RPM
TORQUE:	1250 lb-ft (1696 N-m) @ 1300 RPM
GOVERNED RPM:	2200
CURVE:	FR96230EV

Standard Equipment on the engine to include the following:

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

One (1) Engine Cooling System Radiator - 1400 Sq. In.
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 IQA to the fire department for the apparatus.

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

The header plates shall be made of 16 gauge brass.

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

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

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

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

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

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

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

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

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

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

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

One (1) Engine Coolant Recovery System
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) Charge Air Cooler - Engine Air Intake
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 IQA to the fire department for the apparatus.

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

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

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

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

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

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

One (1) Long Life Coolant
13-A0-1800

LONG LIFE COOLANT

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

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

One (1) Premium Cooling System Hoses
13-A0-1900

COOLANT HOSES

The entire chassis cooling system shall have premium rubber hoses.

One (1) Constant Torque Cooling System Clamps - Entire System
13-A0-1960

COOLANT SYSTEM CLAMPS

Constant torque clamps shall be used for all cooling system hoses. These clamps shall utilize a belleville spring mechanism to automatically increase or decrease the clamp diameter due to changes in operational or environmental temperatures. The clamps shall have an extended inner liner which will protect the coolant hoses from damage and helps maintain consistent sealing pressure. These clamps

shall be constructed with a 410 stainless steel hex screw and a 300 series stainless steel band. The clamps shall meet SAE J1508 type "SLHD" standards.

One (1) Heater Shut Off Valves
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) EPA24 Clean Idle Label
13-EV-0010

EPA24 CLEAN IDLE LABEL

A permanent label shall be provided and installed for EPA clean-idle requirements.

One (1) Engine Air Intake Filter, Fleetguard
13-I0-0010

ENGINE AIR INTAKE FILTER

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

One (1) Engine Oil - First Fill
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) Engine Magnetic Drain Plug
13-LD-5100

ENGINE DRAIN PLUG

A magnetic drain plug shall be installed in the engine oil pan.

One (1) Engine Brake - Cummins L9 Engine
13-N0-0210

ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

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

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

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

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

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

One (1) Fast (High) Idle - Manual Select - Auto Low Voltage
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) Ember Separator (Spark Arrestor) - Air Intake
13-V0-0210

EMBER SEPARATOR

An Ember Separator shall be installed to the chassis air intake system. The ember separator shall be affixed to the inlet of the air cleaner housing mounted above the radiator to filter out airborne embers.

One (1) Fan Clutch - Fully Variable Fan Drive
13-V0-3020

FAN DRIVE

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

One (1) Compliant Exhaust Treatment System - L9 >360
13-Y0-0621

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) Cummins Aftertreatment System - L9 - >360
13-Y0-1611

CUMMINS AFTERTREATMENT SYSTEM

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

One (1) Stainless Tailpipe - Curb Side - 90° Exit - Straight Cut End
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) Exhaust Tailpipe Diffuser
13-Y0-6010

EXHAUST TAILPIPE DIFFUSER

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

One (1) DEF System - 5 Gallon Reservoir - ISL
13-Z0-0015

DIESEL EXHAUST FLUID SYSTEM

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

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

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

One (1) Allison 3000EVS Automatic Transmission
14-C0-3040

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) Transmission Magnetic Drain Plug
14-C0-5100

TRANSMISSION DRAIN PLUG

A magnetic drain plug shall be installed in the Allison automatic transmission.

One (1) Transmission Fluid - Allison TES-389
14-D0-0100

TRANSMISSION FLUID

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

One (1) Five Speed Allison Programming - 3000EVS
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) Automatic Neutral Programming - 2500 EVS / 3000EVS / 4000EVS
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) Drivertrain Fluid Monitoring System
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 left of the instrument panel at the engine enclosure console in clear view of the driver.

POWER STEERING FLUID

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

FUNCTION

The LED indicator lights will illuminate when the ignition is placed in the ON position as a test to ensure 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) 1760 Series Drivelines
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) Fuel Tank - Steel - 50 Gallon - Stainless Straps
25-A0-2000

FUEL TANK

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

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

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

One (1) Reinforced Fuel Lines
25-V0-0000

FUEL LINES

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

One (1) Fuel Filter - Cummins - Factory
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) 360 Amp Alternator - Niehoff
45-D0-2360

ALTERNATOR

A 360 Amp NIEHOFF alternator shall be installed on the engine. The alternator shall be regulated by a remote mounted regulator.

One (1) Temporary Installed Drivelines - OEM Edit and Add Info for Engineering
14-W0-1802

TEMPORARY DRIVELINE INSTALLATION

The drivelines and driveline center bearing supports shall be a temporary installation for completion by the apparatus manufacturer.

One (1) 3/16" Alum - MFDxl - 1871 - 12" Raised Roof - FULL LENGTH DOORS
40-C0-9030

FIRETRUCK CAB

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

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

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

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

CAB MATERIALS AND CONSTRUCTION

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

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

- Cab roof - 3/16 inch (.190 inch) aluminum
- Cab doors - 3/16 inch (.190 inch) aluminum

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

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

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

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

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

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

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

CAB DIMENSIONS

The cab shall have the following dimensional requirements:

- Overall Width - 100.00 inches
- Roof - 12.00 inches Raised
- Center of front axle to back of cab - 60.00 inches
- Center of front axle to front of cab - 74.00 inches
- Windshield area - 4,200 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum

The cab interior shall have the following dimensional requirements:

- Drivers side floor width - 22.50 inches minimum
- Floor to the ceiling in the driver and officers area of the cab - 59.50 inches minimum
- Floor to the top of the engine enclosure - 28.00 inches maximum
- Officers side floor width - 24.50 inches minimum

- The measurement across the floor from the rear wall to the first vertical portion of the engine enclosure - 43.25 inches and the floor width from step well to step well shall be no less than 84.00 inches
- Floor to the ceiling in the rear of the cab - 65.50 inches minimum

CAB DOORS

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

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

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

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

FRONT DOORS-FULL LENGTH

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

REAR CAB DOORS-FULL LENGTH

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

INTERIOR DOOR LOCKS

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

CAB GLASS

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

All glass shall be tinted.

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

SUNVISORS

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

DRIVER SIDE ELECTRICAL CABINET

An electrical cabinet designed to house the main battery electrical disconnect and facilitate the installation of an onboard battery charger or battery conditioner, shall be provided under the driver's seat. A bolt on limited access; aluminum spatter painted hatch, shall be installed on the front side of the seat riser. The access hatch shall have a louvered section to provide air circulation to the cabinet.

WINDSHIELD WIPERS

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

FASTENERS

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

BATTERY ACCESS

The rear cab steps shall have a hinged 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) Transmission Selector - Push Button Type
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) Transmission Fluid Check - Transmission Selector
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) Exterior Cab Door Handles - Bright Finish

40-DH-5200

EXTERIOR DOOR HANDLES - BRIGHT FINISH

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

One (1) Cab Entry Steps, Full Length Doors, 100" W cabs - CORE
40-DH-6015

CAB STEPS

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

INTERIOR CAB STEP TRIM

The cab steps shall be enclosed behind each entry door. The lower step shall be sealed from the underside of the cab to reduce road splash from entering the step area while the vehicle is in motion. The horizontal upper step surfaces shall be integral to the cab and shall be covered with bright aluminum tread plate. The lower cab steps shall be constructed from stainless steel Laser Grip material, meeting the requirements of (NFPA 1900) Standard for Automotive Fire Apparatus.

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

One (1) Cab Entry Steps - Bright Finish
40-DH-8010

CAB ENTRY STEPS - BRIGHT FINISH

The cab entry steps shall have a bright finish.

One (1) DEF Fill, Left Rear Crew Step Area
40-DH-7010

DEF FILL ACCESS

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

One (1) Overhead Heater / Defroster - 12" RR/100"W - CORE
40-U0-0195

HEATER / DEFROSTER

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

One (1) 45K BTU AC / 33.4K BTU Heat - Ceiling Mounted Evaporator - Single Condenser
40-U0-0470

45,000 BTU AIR CONDITIONING

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

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

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

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

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

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

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

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

One (1) Cab Climate Control Insulation Package
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) EMI/RFI Noise Suppression
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) Stainless Steel Battery Tray
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) Battery Jumper Studs
45-NU-0710

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 black cables, the positive cable shall have a red color coded shrink tube. The studs shall be protected with color coded plastic covers when not being used.

One (1) Single Battery System - 4 Group 31 - CORE
45-NU-03SF

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 per current edition (NFPA 1900) Standard for Automotive Fire Apparatus.

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 the 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

The engine start button shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly adjacent to the start button to indicate that the battery bank is on.

One (1) Battery Bus Bars
45-NU-0410

BATTERY POWER BUS BARS

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

One (1) 40 Amp - Kussmaul - Chief Series W/ 12 Vdc - Comp Option - Auto Charge 4012
45-T0-0665

BATTERY CHARGER

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

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

The charger shall include the following features:

Dual Battery Type Technology – allows for two (2) dissimilar battery chemistry charging at the same time. Accommodates Flooded, Gelled Electrolyte, AGM, Odyssey®, Lithium Iron Phosphate (LFP), and customized.
Parasitic Load Compensation (PLC) – allows for user input of total accessory load amps on the vehicle. This allows the charger to shift the absorption stage set point, so the battery voltage drops to the float voltage when the desired current is reached.

Configurable for 3-step or float charging.

One (1) Kussmaul - Auto Air 091-9-12 Vdc Compressor
09-X0-0900

ON-BOARD ELECTRIC COMPRESSOR

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

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

One (1) Kussmaul Remote Control Panel - Kussmaul Charge {USE with Standard Cover]

45-T0-6130

REMOTE CONTROL PANEL

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

One (1) Charge Indicator Panel on Driver's Seat Box
45-T0-6210

REMOTE CHARGE INDICATOR LOCATION

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

One (1) Kussmaul 20 Amp - 120V- Super Auto Eject - Custom Cabs CORE
45-Z0-1193

SHORELINE AUTO-EJECT

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

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

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

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

One (1) Standard Cover, Kussmaul 091-55--XX {SELECT Remote Control Panel}
45-Z0-1335

ELECTRICAL INLET COVER

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

One (1) Yellow Auto-Eject Cover
45-Z0-1382

ELECTRICAL INLET COVER COLOR

The Auto-Eject cover shall be yellow in color.

One (1) Electrical Inlet Location- Cab Exterior Mounted - Behind the Driver's Door
45-Z0-1505

ELECTRICAL INLET LOCATION

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

One (1) 40-DE-0300 Engine Enclosure - Vinyl Covering - Acoustiblok - NO FLUID CHECK HATCH

ENGINE ENCLOSURE

To reduce the noise in the cab the engine enclosure metal on the inside of the cab shall be completely covered with Acoustiblok sound isolation material. The material shall be sealed at all seams with acoustical sealant.

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

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

The insulation for protection from heat and sound shall keep the dBa level within the limits stated in current edition (NFPA 1900) Standard for Automotive Fire Apparatus.

One (1) 40-DE-1030 Painted Interior Door Panels

CAB DOORS - INTERIOR TRIM

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

One (1) 40-DE-2010 Interior Padding - Standard Ceiling

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 Interior Padding - Standard Rear Wall

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 Material - Acoustical Wear Mat

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-3050 Door Reflective Material - Red/Fluorescent Green Diamond Grade

REFLECTIVE MATERIAL - INTERIOR CAB DOORS

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

One (1) 40-DE-7030 Steering Wheel and Column - 4Front - 100" - CORE

STEERING WHEEL AND COLUMN

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

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

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

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

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

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

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

One (1) 40-DH-0260 Grab Hndls - Inside - Driver's, Officer's A-Post and Both Crew Doors

GRAB HANDLES

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

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

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

One (1) 40-LC-0114 Open Cmpmnt Lght-Red Flashing-Whelen OS LED w/ blck flange

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 black flange is to be supplied with the light.

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-LC-2010 Audible Alarm for Open Compartment Circuit

OPEN COMPARTMENT AUDIBLE ALARM

An audible alarm shall be wired into the compartment open light circuit.

One (1) 40-LD-0505 Six (6) Whelen CREGCS 6" White/Red LED Dome Lights

CAB DOME LIGHTS

There shall be six (6) Whelen Model CREGCS 6.00 inch round dome lights provided and installed in the cab ceiling.

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

One (1) each, inboard, near the driver and officer and four (4) placed in two (2) rows in the rear crew area mounted above each outboard riding position, evenly spaced side to side across the ceiling.

One (1) 40-LD-3010 Cab Dome Lighting Activation

CAB DOME LIGHTING ACTIVATION

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

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

One (1) 40-LD-4010 Step Nose LED Lighting - WHITE/RED

CAB FLOOR LED STEP LIGHTING

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

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

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

One (1) Cab Door Controlled
40-LD-5184

LIGHT - ACTIVATION

The lighting shall be activated by opening a cab door.

One (1) Driver's Overhead 12-Place (6 over 6) Switch Panel - CORE
40-U0-6050

DRIVER'S OVERHEAD SWITCH PANEL

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

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

Top Bank:

Switch 1: Engine Regeneration Inhibit
Switch 2: Engine High Idle
Switch 3: Interior Cab White Lighting
Switch 4: Ground Lights
Switch 5: Head Lights
Switch 6.: Dash Dimmer Up

Bottom Bank:

Switch 1: Engine Regeneration Start
Switch 2: Mirror Heat
Switch 3: Interior Cab Red Lighting
Switch 4: Mud & Snow ATC Disable
Swtich 5: Parking Lights
Switch 6: Dash Dimmer Down

One (1) Rugged Driver and Officer Dash Enclosure - CORE
40-U0-6060

DRIVER'S & OFFICER'S RUGGED DASH CONSOLE

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

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

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

One (1) Officer Side Open Storage Slots in Dash - CORE
40-U0-7010

OFFICER'S SIDE OPEN STORAGE SLOTS

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

There shall also be a velcro strap attached with footman loops provided to secure the contents.

One (1) Instrumentation (J1939) and Controls - CORE
40-V0-0105

INSTRUMENTATION AND CONTROLS

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

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

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

The instrument panel shall include the following gauges and indicators.

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

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

The engine control panel shall include the following:

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

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

One (1) Audible Turn Signal Reminder
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) Audible Lights On Reminder
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) Audible Parking Brake Reminder
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) Dual Trip Odometers
40-V0-0130

DUAL TRIP ODOMETERS

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) Odometer Activated While in Pump Mode
40-V0-0148

SPEEDOMETER ACTIVATED IN PUMP MODE

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

One (1) Low Fuel Warning Light
40-V0-0151

LOW FUEL LIGHT

A "Low Fuel" warning light 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) Transmission Temperature Warning Light and Alarm
40-V0-0152

TRANSMISSION OVERHEAT WARNING LIGHT

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

One (1) Low Voltage Warning Light
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) Air Cleaner Restriction Indicator
40-V0-0156

AIR CLEANER RESTRICTION INDICATOR

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

One (1) Low Coolant Warning
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) Forward Engine Enclosure Console - Manual Switches (Driver-16/Officer-8)
40-X0-1120

FORWARD ENGINE ENCLOSURE CONTROL CONSOLE

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

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

There shall be a sixteen (16) place switch panel (8 over 8) provided and installed that is accessible to the driver position. The panel shall have ergonomic molded, rocker type switches with dimmable backlighting. The switches will be clearly labeled.

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

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

There shall be an eight place (4 over 4) switch panel provided and installed that is accessible to the officer position. The panel shall have ergonomic molded, rocker type switches with dimmable backlighting. The switches will be clearly labeled.

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

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

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

One (1) Parking Brake Control - Driver's Area - Right Side
40-V0-0503

PARKING BRAKE CONTROL VALVE

The parking brake control valve shall be located within easy reach of the driver to the right side.

One (1) Engine Enclosure Storage Tray with Recessed Cupholders
40-X0-1200

STORAGE TRAY AND CUP HOLDERS

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

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

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

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

One (1) USB-A/USB-C Charging Ports - Driver's and Officer's Area
40-X0-1415

USB/USB-C CHARGING PORT

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

One (1) Battery Switched Power
40-Z0-0014

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

One (1) Apparatus Base Digital Electrical System - Class1 Multiplex - CORE
45-NS-0350

MULTIPLEXED ELECTRICAL SYSTEM

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

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

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

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

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

CHASSIS COLOR CODED WIRING

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

All wiring shall be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of current edition (NFPA 1900) Standard for Automotive Fire Apparatus.

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

ELECTRICAL SYSTEM CONNECTORS

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

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

One (1) Information Display Module - Driver's Position
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.

One (1) USB Programming Port
45-NS-0400

USB PROGRAMMING PORT

There shall be a cable connected to the Supernode that is routed to the underside of the driver's dash. The cable shall terminate in a USB bulkhead connection with a protective cover.

A label shall be applied adjacent to the connector.

One (1) Pump Shift, w/Label, Indicator Lgts, Mtd Cab/PPnl
40-X0-7050

ELECTRIC OVER AIR PUMP SHIFT

The pump shift shall be electric over air operated and shall incorporate an electric switch in the cab and a MAC valve on the chassis to operate the pump transmission from road to pump.

The pump shift switch shall be mounted in the cab and identified as "PUMP SHIFT" and shall include instructions permanently inscribed on the pump shift switch plate. The in-cab switch shall be an electric locking lever style switch that has a spring-loaded locking collar that locks in "Road" or "Pump" mode.

The MAC valve shall be mounted on the intermediate frame crossmember and have a label indicating the correct push-in connector for road and pump mode. These push-in connectors shall have plugs installed for transit to the final vehicle manufacturer.

The pump shift control assembly shall incorporate an indicating light system. There shall be two (2) lights adjacent to the pump shift control panel in the cab to show the position of the pump when the control is moved to "Pump" position. One (1) indicator light shall notify the operator when the shift has been completed to PUMP, labeled as "PUMP ENGAGED". The second indicator light in the cab will notify the operator when the chassis transmission is in correct pumping gear, labeled as "OK TO PUMP".

One (1) Back-Up Camera System, ASA Audiovox, Custom Chassis
40-YC-3815

HME, Inc.

BACKUP CAMERA

There shall be an ASA Audiovox video system provided with the chassis cab.

One (1) 40-YC-3820 Observation Monitor - 7" LCD - Waterproof, Custom Chassis

BACK-UP CAMERA MONITOR

The color monitor shall be manufactured by ASA.

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

One (1) 40-YC-4005 Monitor Mounting - Overhead Position - Driver, Custom Chassis

MONITOR LOCATION

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

One (1) 40-YC-4080 Monitor Activation - Battery Powered

MONITOR ACTIVATION

The back up camera monitor shall be powered with the battery power switch in the cab.

One (1) 40-YC-3840 Camera - Color - Rear - High Performance - White Housing

REAR CAMERA - COLOR - HIGH PERFORMANCE

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

One (1) 40-YC-4104 Camera Activation Transmission Reverse Powered

CAMERA ACTIVATION

The back up camera shall be powered when the vehicle's transmission is placed into reverse.

One (1) 40-YC-4205 Camera Mounting - Body Rear - Shipped Loose

CAMERA LOCATION

The back-up camera shall be shipped loosed in the cab to be installed by the apparatus manufacture.

One (1) 40-Z0-0005 (2) 12 Vdc Power Point Sockets w/ Rubber Plugs - Driver/Officer

12Vdc POWER POINT

There shall be two (2) 12 Volt, socket (cigarette lighter) type, receptacles each with a rubber plug provided and installed in the cab.

One (1) shall be installed in the driver's area of the cab and one (1) shall be installed in the officer's area of the cab.

One (1) 40-Z0-0014 Battery Switched Power

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

One (1) 40-Z0-0210 12Vdc Power Circuits - Radio and/or Accessories

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-Z0-0310 Location - Engine Enclosure Top

CIRCUIT TERMINATION LOCATION

The radio / accessory power circuit shall terminate in the center of the cab on top of the engine enclosure.

One (1) 40-Z0-0415 (2) Cab 120-Volt ac Circuits - CORE

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-Z0-0515 Location - (2) Engine Enclosure Top - CORE

CIRCUIT TERMINATION LOCATION

There shall be two (2) 120-Volt AC power circuits that shall terminate in the center of the cab on top of the engine enclosure.

Two (2) Electrical Outlet, Conf #2, Duplex, 120V/15A, Straight Blade
40-Z0-0600

ELECTRICAL OUTLET

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

Two (2) Power Source - Shoreline Connection
40-Z0-0670

POWER SOURCE

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

One (1) AM/FM Stereo NOAA, Frt Input, Bluetooth Radio w/Four Speakers
40-Z0-3100

PUBLIC BROADCAST RADIO

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

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

- Waterproof
- uV and Corrosion Resistant
- Electronic US/Euro AM/FM Tuner
- 30 Programmable Presets (12 AM, 18 FM)
- Non-Volatile Memory for User Settings and Preset Memories
- 7-Channel NOAA Weather Band
- Weather Alert
- Bluetooth Ready
- Auxiliary Audio Input
- 2-Channel Amplified Audio Output
- Backlit Controls with Selectable Illumination Color
- Daylight Readable Display
- Clock with 30-day Backup Power
- Work Timer
- Audible Beep Confirmation Tone

ANTENNA

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

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

One (1) Radio Location, Overhead

40-Z0-3800

RADIO LOCATION

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

One (1) Road Safety Kit
40-Z0-9900

ROAD SAFETY KIT

The following chassis loose equipment as outlined in current edition (NFPA 1900) Standard for Automotive Fire Apparatus shall be provided.

One (1) Fire Extinguisher - 2.5# ABC
40-Z0-9910

FIRE EXTINGUISHER

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) (1) Hazard Triangle Kit (contains 3 triangles)
40-Z0-9920

HAZARD TRIANGLE KIT

One (1) set of three (3) 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) (5) Traffic Cones, Ship Loose
40-Z0-9930

TRAFFIC CONES

Five (5) DOT approved traffic cones shall be supplied with the chassis. They shall be shipped loose with the chassis.

One (1) Illuminated Traffic Warning Devices (Flares), Ship Loose
40-Z0-9940

ILLUMINCATED TRAFIC WARNING DEVICES

A minimum of (5) DOT approved illuminated traffic warning devices or flares shall be supplied with the chassis. They shall be shipped loose with the chassis.

One (1) Cab Crashworthiness Test
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 the current edition (NFPA 1900) Standard for Automotive Fire Apparatus.

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

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

Quasi-static roof strength shall be based on SAE J2422 specifications and procedures.

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

One (1) Exterior Grab Handles - 24" Long
40-DH-2100

EXTERIOR GRAB HANDLES

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

One (1) Exterior Grab Handles - Bright Finish
40-DH-5100

EXTERIOR GRAB HANDLES - BRIGHT FINISH

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

One (1) Stylized Stainless Front Grille - 1871- CORE
40-DZ-0210

FRONT GRILLE

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

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

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

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

One (1) Cab Grille - Bright Finish
40-DZ-3001

CAB GRILLES - BRIGHT FINISH

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

One (1) Headlights - HIVIZ LED - Daytime Running Halo Ring - Custom Cab

HME, Inc.

55-03-0165

HEADLIGHTS

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

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

One (1) Headlights - Upper Position
55-03-0170

HEADLIGHTS - POSITION

The headlights shall be in the upper position.

One (1) Headlights - Custom Cab - Bright Finish
55-03-0180

HEADLIGHTS - BRIGHT FINISH

The headlights shall have a chrome bezel.

One (1) Frt Turn Signal - Whelen 600 LED - Outboard/Inline Hdlts - Custom Cab
55-04-0755

TURN SIGNALS

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

One (1) Lens Color - Clear
55-04-0855

LENSE COLOR

The lenses shall be clear in color.

One (1) Light Housing, Bright Finish
55-04-0905

LIGHT HOUSING - BRIGHT FINISH

These lights shall be mounted in a chrome plated bezel.

One (1) Upper Zone A, Lightbar, Frt, Whelen - Freedom F4NV 72" LED - 8 Modules
57-04-3360

HME, Inc.

ZONE A: ROOF MOUNTED LIGHTBAR

A Whelen Freedom model F4N7VLED, 72.00 inch lightbar system shall be supplied and permanently mounted on the cab roof, as far forward as possible.

This lightbar system shall be supplied with eight (8) LED elements, six (6) red and two (2) white.

This lightbar 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 cwhite light(s) in the lightbar shall be disabled automatically for the “Blocking Right of Way” mode.

One (1) 57-20-3318 (4) Cab, Lower Front Warning - Zone A: Whelen - M6 - Linear Super LED, QUADS

ZONE A: LOW LEVEL WARNING LIGHTS

Four (4) Whelen warning lights, M6 Series, Linear Super-LED lightheads shall be mounted two (2) each side on the front of the chassis in a separate housing than the headlights.

These four (4) lights fulfill the requirements for Lower Zone A lower level warning devices.

One (1) 57-03-2000 Red LEDs with Clear Lenses

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

One (1) 57-20-3450 Cab, Lwr Light, Bezel - Bright Finish

LOW LEVEL WARNING LIGHTS - BRIGHT FINISH

These lights shall be mounted in a chrome plated bezel.

One (1) 57-30-3314 (2) Bumper, Lower Side Warning - Zone B & D, Whelen - M6 - Linear LED

ZONE B & D: LOWER SIDE INTERSECTION LIGHTS

Two (2) Whelen warning lights, M6, Linear Super-LED light heads shall be mounted one (1) on each side of the front bumper with a flange.

One (1) 57-03-2000 Red LEDs with Clear Lenses

WARNING LIGHTS COLOR

The warning lights shall be red with clear lenses.

One (1) Bumper Side Warning Lights, Bezel - Bright Finish
57-30-4001

BUMPER SIDE WARNING LIGHTS - BRIGHT FINISH

The lights shall be mounted in a chrome plated flange.

One (1) Cab Front Mud flaps
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) Cab Ground Lights - LED Strip Lights
40-G0-1300

CAB GROUND LIGHTING - LED

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

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

One (1) Mekra Lang - Htd & Remote Control Mirrors w/Convex, Chrome
40-J0-2800

REARVIEW MIRRORS

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

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

The mirror heads shall have a smooth chrome plated high impact non-metallic housing.

One (1) Cab Side Windows - Fixed Glass
40-K0-1000

CAB SIDE WINDOWS

Two (2) AS-2 tempered glass, fixed side windows, 26.50 inches high x 16.00 inches wide shall be furnished, one (1) 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) Dark Gray-Lite Door Glass - Cab Side, Crew Doors and Rear (when spec'd)
40-KA-4022

WINDOW TINTING

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

One (1) 40-LE-1002 (1) Engine Maintenance Light LED - MWL-13 Maxxima - Custom Cab

UNDER CAB ENGINE MAINTENANCE LIGHT

One (1) MWL-13 Maxxima Gorilla LED light shall be supplied beneath the cab. The light shall illuminate automatically when the cab is tilted to the full tilt position.

One (1) 40-N0-0805 Cab Stainless Fender

STAINLESS CAB FENDERETTES

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

One (1) 40-N0-0806 Cab Fender - Bright Finish

STAINLESS CAB FENDERETTES - BRIGHT FINISH

The cab fenderettes shall have a bright polished finish.

One (1) 40-N0-1400 Exterior Rear Wall - Diamond Plate Overlay - Bright Finish

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

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

One (1) 40-P0-0100 Cab Tilt - Electric Pump

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 (2) 1.00 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) Cab Tilt Road Interlock
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) Custom Cab - Cab - LED - ICC Lighting - Whelen OS Series
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.

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) Custom Cab - Cab - LED - ICC Lighting - Bright Finish
55-02-1120

CAB ICC MARKER LIGHTING - BRIGHT FINISH

These lights are to be mounted in a chrome flange.

HME, Inc.

One (1) Back Up Alarm
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 and shall activate when the transmission is placed into reverse mode.

One (1) Black Interior Paint, Black Spatter Panels
40-Q0-1201

INTERIOR FINISH

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

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

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

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

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

The sun visors shall be supplied black in color.

One (1) Headliner - Black
40-Q0-2010

HEADLINER COLOR

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

One (1) Rear Wall Covering - Black
40-Q0-2110

REAR WALL COLOR

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

One (1) Floor Covering - Black
40-Q0-2210

FLOOR COLOR

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

One (1) Door Panels - Black
40-Q0-2302

HME, Inc.

DOOR PANEL COLOR

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

One (1) Single Color Cab Exterior Paint
40-Q0-3010

CAB EXTERIOR FINISH - SINGLE COLOR

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) Cab Exterior Paint - PPG - Urethane
40-Q0-3080

PAINT BRAND

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

One (1) Seat Position 1 - Driver's Seat
40-RW-1010

DRIVER'S SEATING POSITION

One (1) Highback - Air Ride Suspension - HO Bostrom - Sierra 500 - ABTS
40-S0-1350

The seat shall be H.O. Bostrom, Sierra 500, ABTS, with air ride suspension, high back seat with 5" of fore and aft slide adjustment. The seat shall have adjustments for height and ride with up to 3" of vertical travel. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

One (1) Seat Position 2 - Officer's Seat
40-RW-1020

OFFICER'S SEATING POSITION

One (1) SCBA Fixed Bottom Cush - Fixed Mtg - HO Bostrom - Tanker 500 - ABTS
40-S0-4310

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

One (1) Filler Pad for SCBA Seats
40-S0-9162

SCBA FILLER PADS

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

One (1) HO Bostrom SecurAll SCBA Locking Bracket
40-S0-9220

SCBA SEAT BRACKET

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

One (1) Seat Position 3 - Rear Facing Left Outboard - Behind Driver
40-RW-1030

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

One (1) SCBA Fixed Bottom Cush - Fixed Mtg - HO Bostrom - Tanker 500 - ABTS
40-S0-5810

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

One (1) HO Bostrom SecurAll SCBA Locking Bracket
40-S0-9220

SCBA SEAT BRACKET

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

One (1) Seat Position 6 - Rear Facing Rt Outboard - Behind Officer
40-RW-1060

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

One (1) SCBA Fixed Bottom Cush - Fixed Mtg - HO Bostrom - Tanker 500 - ABTS
40-S0-5810

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

One (1) HO Bostrom SecurAll SCBA Locking Bracket
40-S0-9220

SCBA SEAT BRACKET

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

One (1) Seat Position 8 - Fwd Facing - Left Inside
40-RW-1080

CREW AREA - FORWARD FACING LEFT INBOARD SEAT POSITION

One (1) SCBA Fixed Bottom Cush - Fixed Mtg - HO Bostrom - Tanker 500 - ABTS
40-S0-5810

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

One (1) HO Bostrom SecurAll SCBA Locking Bracket
40-S0-9220

SCBA SEAT BRACKET

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

One (1) Seat Position 9 - Fwd Facing - Right Inside
40-RW-1090

CREW AREA - FORWARD FACING RIGHT INBOARD SEAT POSITION

One (1) SCBA Fixed Bottom Cush - Fixed Mtg - HO Bostrom - Tanker 500 - ABTS
40-S0-5810

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

One (1) HO Bostrom SecurAll SCBA Locking Bracket
40-S0-9220

SCBA SEAT BRACKET

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

One (1) Forward Facing Seat Riser {NO Riser if remove Seats 8 & 9}
40-S0-6100

FORWARD FACING SEAT RISER

The center forward facing seat(s) shall be installed on a powder coated aluminum riser. The front of the seat riser will be open without a restraint system to provide a location for storage of small lightweight gear.

One (1) Gray / Black Durawear Seat Covering
40-S0-7420

SEAT COVERING MATERIAL

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

One (1) Seat Belt Warning Labels
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.

Six (6) Fire Department Provided Traffic Vests
40-S0-8965

TRAFFIC VESTS

The Fire Department shall provide the traffic vests, one (1) per seat, prior to the apparatus being placed into service.

Six (6) Fire Department Provided Helmet Restraints
40-S0-8992

HELMET RESTRAINTS - CAB MOUNTED

The Fire Department shall provide and install the Helmet Restraints prior to the apparatus being placed into service.

One (1) Bostrom Seat Logo Provided (OEM Chassis)
40-S0-7210

CAB SEAT LOGO

A Bostrom seat logo shall be provided for each applicable cab area seat.

One (1) Vehicle Data Recorder - CORE
40-S0-8015

VEHICLE DATA RECORDER

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

The VDR will function as defined by current edition (NFPA 1900) Standard for Automotive Fire Apparatus utilizing the power train’s J1939 data.

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

One (1) Seat Belt Warning System Monitor Panel
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) IMMI 4Front Supplemental Front Airbag System
40-S0-8910

IMMI 4FRONT SUPPLEMENTAL FRONT AIRBAG SYSTEM

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

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

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

One (1) Front Bumper - SST -- Chassis {Swv Suct Opt-Ctr Hsewl - Top Q2B-Jumpline Opt}
42-A4-0100

HME, Inc.

FRONT BUMPER

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

One (1) Front Bumper Ext - 18" - Chassis {Swv Suc Opt - Ctr Hsewl - Top Q2B - Jmpln Opt}
01-V3-0010

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 18.00 inches ahead of the front face of the cab skin.

One (1) (2) Tow Hooks Beneath Bumper
01-W0-0700

TOW HOOKS

Two (2) tow hooks shall be provided and shall be attached directly to the front frame extension under the bumper.

These tow hooks shall be attached with two (2) Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

One (1) Tow Hooks - Chrome Plated
01-W0-0750

TOW HOOK FINISH

The tow hooks will have a chrome plated finish.

One (1) Front Gravelshield - Chassis
01-Z0-8052

GRAVELSHIELD

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

One (1) Bright Finish Gravelshield
01-Z0-8065

BRIGHT FINISH GRAVELSHIELD

The gravelshield shall have a bright finish.

One (1) Center Hosewell - Large - 18" Ext. - Chassis
01-Z0-8507

HME, Inc.

CENTER HOSEWELL

A hosewell shall be mounted between the bumper extension rails in the center of the gravelshield. The hosewell shall be constructed of 11 gauge stainless steel. The hosewell shall be 31-1/2" wide x 9-1/2" deep x 13-1/2" front to back.

One (1) Hosewell Cover, Center - Hinged Diamondplate, With Notch
01-Z0-8770

HOSEWELL COVER

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

One (1) Hosewell Cover - Bright Finish {Watch Gravelshield Selection}
01-Z0-8790

HOSEWELL COVER

The hosewell cover shall have a bright finish.

One (1) LED Lighting, Hosewell - Chassis
01-Z0-8828

LIGHTING - CENTER HOSEWELL

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

One (1) Open Grate Mat, Hosewell
01-Z0-8802

OPEN GRATE MAT - HOSEWELL

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

One (1) (1) Bumper Ground Light - 36" LED Strip Light {N/A on 18" Formed, Change to 27"}
40-G0-1420

FRONT BUMPER UNDERBODY LIGHTING

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

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

One (1) Dual Stutter Tone Air Horns - Bumper Recessed O/B Frame - Chassis
40-H0-1113

HME, Inc.

AIR HORNS

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

One (1) Air Horns - Bright Finish
40-H0-1120

AIR HORNS FINSIH - BRIGHT FINISH

The air horns shall have a bright finish.

One (1) Air Horn Circuit Powered - Battery and Ignition
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) Air Horn Control - Lanyard
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) Air/Elec Horn-Strg Wheel Cntrl - {Siren Switch Upgrade Here}
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) Electronic Siren-Whelen-Model 295SLSA1 (O/B Mtd Speakers)
40-H0-2020

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) Siren Head Mounting - Center Console Mounted
40-H0-5412

SIREN CONTROL LOCATION

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

One (1) Siren Speakers - Two (2) - Cast Products - Outboard Mtd
40-HA-2064

SIREN SPEAKERS

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

One (1) Siren Speaker - Bright Finish
40-HA-2070

SIREN SPEAKER

The Cast Products siren speaker shall have a bright finish.

One (1) Temporary Chassis Rear Taillights and Mud Flaps
62-01-0100

TAILLIGHTS AND REAR MUDFLAPS

There shall be two (2) taillights and temporary rear mud flaps installed on the chassis for road operation in testing and delivery.

One (1) Onboard USB Electronic Operator's Manual w/Parts List
69-C0-0110

ONBOARD ELECTRONIC OPERATION AND MAINTENANCE MANUAL

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

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

- Cab/Chassis Operator's Manual
- Cab/Chassis Construction Bill of Material Parts List

Electrical System:

- Complete wiring schematics for the cab and chassis.
- Diagrams of the cab and chassis showing the wiring harness routing. 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 cab and chassis shall be provided with hyperlinks to the connectors for pin designations and to the drawings for harness location.
- As built wiring information

Air System:

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