

HME, Incorporated

== HME Spectr Custom Chassis - EPA07 - 2.010 ==

NFPA-1901, 2009 Edition

NFPA COMPLIANCE

The vehicle shall be compliant with NFPA-1901, 2009 edition.

Vocation and Basic Attributes - Chassis

CHASSIS VOCATION AND BASIC ATTRIBUTES

BUILD CHASSIS TO NFPA 2003 STANDARDS

When completed this chassis shall have the following attributes:

Order Information:

Apparatus Builder:

P.O. Number:

Selling Dealer:

Apparatus Builder Shop Order Number:

User Information:

End User: HME Spectr Chassis Demo

Mailing Address:

City:

State:

Zip Code:

F.D. Contact:

Phone Number:

Fax Number:

Vocation:

- Pumper (With midship water pump)

- Pumper (With rear mount water pump)

- Rescue (No water pump)

- Aerial (No water pump)

- Aerial (With midship water pump)

- Aerial (With rear mount water pump)

- Aerial (Is HME supplying a Boom Support)

(When a water pump other than a conventional midship type is to be installed HME requires details of the installation that would be necessary for interface with the chassis.)

(When an aerial device is installed over the cab, a dimension of the width of the ladder over the cab roof must be supplied for HME to insure clearance of all roof mounted devices. The ladder is NA inches wide over the entire cab roof.

Also, when an aerial boom support is selected from HME a drawing indicating the boom support interface dimensions must be provided.)

Chassis Frame Dimensions:

190" - Wheelbase (centerline of front axle to centerline of rear axle)

130" - Cab to Axle (rear of cab to centerline of rear axle does not include clearance for cab tilt.)

50" - Rear Frame Overhang (centerline of rear axle to the end of the frame)

Hose well options:

Indicate the hose that shall be installed in the well.

Hosewell Location: N/A

___ - Officer's

___ - Center

___ - Driver's

Hose Brand:

Hose Model:

Hose Size: _____ inch

Number of feet required:

If more than one hosewell is ordered indicate on a separate piece of paper the information for the other well.

Water Pump:

___ - Pump installed at **HME**

___ - Temporary driveline installed by **HME** for pump

X - Installed at apparatus OEM

___ - None installed on finished apparatus

Pump Data:

Manufacturer:

Model:

Ratio:

Location ahead of the C/L of Rear Axle:

If Hale Pump: Transfer Case Long ___ or Short ___

If Darley Pump: Transfer Case Forward ___ or Aft ___

PTO installations - Make sure you have selected the proper options in the QW file submitted with the order.

Estimated inservice weight including equipment, water and firefighters:

Front Axle - _____ N/A _____ lbs.

Rear axle(s) - _____ N/A _____ lbs.

Does chassis have an overall height restriction? If so fill in the blank.

Overall height restriction - _____ N/A _____

___ - Inches ground to the top of frame at centerline of front axle when loaded to _____ lbs.

___ - Inches ground to the top of frame at centerline of rear axle when loaded to _____ lbs.

Are there minimum angle of approach or departure angle requirements? If so fill in the blank.

Minimum angle of approach - _____ N/A _____ degrees

Minimum angle of departure - _____ N/A _____ degrees

Delivery Charge - HME delivery to OEM - \$2.25 / mile

TRANSPORTATION CHARGES

The chassis shall be delivered by HME upon completion with a charge of \$2.25 per mile that is added to the invoice price.

Deliver to:

Paint Codes and Basic Attributes - Chassis

PAINT CODES AND BASIC ATTRIBUTES

Paint Information

Paint Manufacturer: Dupont

(Be sure you have selected 40-Q0-18 for paint other than Dupont Imron)

CAB EXTERIOR

Two Tone Color:

Upper paint color: White

Upper paint code: 817

Lower paint color: Red

Lower paint code: 4992XM

Paint Break Line (Scheme #): 2F

Note: If option for a Custom Two-Tone Paint is selected a drawing, with dimensions, must be attached for order entry. The HME 3A paint scheme will be used if no paint scheme is specified for the Spectr & 1871W. The HME 12A paint scheme will be used if not paint scheme is specified for the SFO.

RIMS

Color Painted Rims Color: * N/A

Color Painted Rims Code: * N/A

*Unless noted else wise the cab lower color will be used when painted rims are selected.

FRAME RAILS

Color Painted Frame Color: * Standard

Color Painted Frame Code: * Standard black

*Unless noted else wise the cab lower color will be used when painted rails are selected.

Custom Firetruck Chassis

CUSTOM FIRETRUCK CHASSIS

The chassis shall be designed and manufactured by a custom chassis manufacturer. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least fifty (50) years.

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

Single Frame Rails

CHASSIS FRAME

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

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

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

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

root.

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

Cab Main Frame Crossmember

CAB MAIN FRAME CROSSMEMBER

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

Front Axle 18,740# - Meritor MFS

FRONT AXLE

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

52° Cramp Angle

CRAMP ANGLE

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

Oil Seals - Front Axle - Factory Premium

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.

S-Cam Brakes - Front Axle

FRONT AXLE BRAKES

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

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

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

Front Suspension 18,740# - Semi-Elliptical Spring

FRONT SUSPENSION

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

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

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

Shock Absorbers - Front Axle

Double acting hydraulic shock absorbers are to be installed.

Steering - 18,740# - Sheppard Single Gear

STEERING SYSTEM

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

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

Goodyear 315/80R22.5-20PR (L) Front - G291 - 18,180#-19,450#

FRONT TIRES

The front tires shall be 315/80R22.5-20PR (L) GOODYEAR G-291 all weather tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" rims.

18,180# - Std Load Rating G291/G287 315/80R22.5 L

STANDARD LOAD RATING

The front axle GAWR using these tires shall be 18,180 lbs. @ 130 psi.

Tire Speed Rating - 68 MPH

TIRE SPEED RATING

The maximum tire speed rating is 68 MPH.

Front - Aluminum Wheels - 9.00

ALUMINUM WHEELS

Two (2) polished aluminum wheels shall be supplied and installed on the front axle. The 22.5" x 9.00" wheels shall be highly polished on the outboard side.

Stainless 'Baby Moon' Caps & Nutcovers

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.

Single Rear Axle 24,000# - Meritor RS-24-160

SINGLE REAR AXLE

The rear axle shall be a MERITOR model "RS-24-160" with a 24,000# capacity for the fire service.

160 Series Differential - Single Axle

MERITOR DIFFERENTIAL

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

Axle Lube - Non Synthetic

AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

Oil Seals - Rear Axle - Factory Premium

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.

S-Cam Brakes - Single Rear Axle

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.

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.

Single Axle Suspension - 27,000# - 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 27,000 lbs. Capacity. The rear suspension shall be a "self-leveling" slipper type with a main torque leaf that contains a military wrapper. The torque leaf shall contain a bronze bushing for long service life.

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

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

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

Air System - Color Coded Nylon Air Lines - Single Axle

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 in the cab. These shall automatically apply in case of air system failure. A mechanical means of releasing the spring brake shall be provided in the event of total loss of air pressure.

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

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

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

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

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

Meritor/Wabco System Saver Air Dryer

AIR DRYER

The air system shall include a MERITOR/WABCO System Saver 1200 air dryer. The dryer shall have a capacity of 30 CFM of air flow.

The air dryer shall have a spin on desiccant cartridge for ease in servicing the dryer desiccant.

The air dryer shall incorporate an integral turbo cut-off valve. The turbo cut-off 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 contaminants without any loss of turbo boost or engine horsepower.

A 12 volt, 100 watt 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.

Air Tank Drains - Manual

MANUAL AIR TANK DRAINS

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

Air Inlet/Outlet in Driver's Step Well

AIR INLET / OUTLET

An outside air system inlet/outlet connection shall be provided and mounted in the driver's cab step area. This connection shall be clearly labeled as to the function. A pipe thread frame coupling shall be provided with 1/4" npt threads. The fire department shall install the appropriate female hose quick connect fitting for proper operation.

ABS Brake System - 4 Wheel - Meritor/Wabco

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.

Stability Enhancement System - 4 Wheel - Meritor/Wabco
MERITOR/WABCO STABILITY ENHANCEMENT SYSTEM

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

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

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

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

Goodyear 11R22.5-16PR (H) Rear M&S - G622 - 24,000#
REAR TIRES

The rear tires shall be 11R22.5-16PR (H) GOODYEAR UNISTEEL G622 RSD traction tread, tubeless radial tires. These tires shall be mounted on 22.5" x 8.25" rims.

Single rear axle GAWR using these tires shall be 24,000 lbs. @ 120 psi.

Tire Speed Rating - 75 MPH
TIRE SPEED RATING

The maximum tire speed rating is 75 MPH.

Inner and Outer Rear - SA - Aluminum Wheels - 8.25
ALUMINUM WHEELS

Four (4) polished aluminum wheels shall be supplied and installed on the single rear axle. The 22.5" x 8.25" wheels shall be highly polished on the outboard side.

Stainless "Lincoln Hat" Hub & Nut Covers
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.

Axle & Chassis Laser Alignment
LASER ALIGNMENT

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

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

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

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

Tire Pressure Monitoring Device - 2 Axles
TIRE PRESSURE MONITORING DEVICE

Each tire installed on the apparatus shall be equipped with a tire pressure monitoring device. The device shall consist of a valve stem cap to with red and green color bands to indicate tire pressure conditions. If the cap is ALL GREEN the tire is properly inflated. If the cap is HALF GREEN/ HALF RED, the tire is approximately 10% under inflated. If the cap is ALL RED, the tire is 20% or more under inflated.

Cummins ISL9 - 450 HP - EPA10 - 1400 Radiator
DIESEL ENGINE

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

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

Standard Equipment on the engine to include the following:

OIL FILTER:	A full flow / by-pass combination
LUBE OIL COOLER:	High efficiency non-drainback full flow cooling
FUEL FILTERS:	Two fuel filters providing 3 / 10 micron absolute filtration
STARTER:	A DELCO, 12 volt, 39 MT-HD starter motor
AIR COMPRESSOR:	A Wabco 18.7 cfm compressor shall be provided
AIR CLEANER:	Farr or equal with fresh air intake

Engine Cooling System Radiator - 1400 Sq. In.
ENGINE COOLANT RADIATOR

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

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

The header plates shall be made of 16 gauge brass.

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

The radiator shall contain three (3) rows of tubes arranged in an inline profile across the radiator core. The entire radiator

shall 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.

Engine Coolant Recovery System **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.

Charge Air Cooler - Engine Air Intake **CHARGE AIR COOLER RADIATOR**

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

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

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

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

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

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

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

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

Radiator Coolant **COOLANT**

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

Premium Cooling System Hoses **COOLANT HOSES**

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

Engine Oil - First Fill **ENGINE OIL**

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

Engine Brake - Cummins ISL Engine **ENGINE BRAKE**

A "JACOBS" Engine Brake shall be supplied.

The Driver's dash shall include an OFF / LOW / HIGH engine brake control switch.

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

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

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

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

Fast (High) Idle - Manual Select - Auto Low Voltage **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.

Water Filter - Cummins Engine

ENGINE COOLANT FILTER

A precharged spin-on corrosion inhibitor/water filter shall be installed in the cooling system. Shut off valves shall be supplied on both sides of the filter to facilitate element changing with out loss of cooling system fluid.

Auxiliary Engine Cooler - Sendure

AUXILIARY ENGINE COOLER

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

Spark Arrestor - Air Intake

SPARK ARRESTOR

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

Fan Clutch - Horton

HORTON FAN

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

EPA 2010 Compliant Exhaust Treatment System

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 aftertreatment device shall be stainless steel.

Cummins Aftertreatment System - EPA10

CUMMINS AFTERTREATMENT SYSTEM

The chassis shall be equipped with a Cummins Aftertreatment System for EPA 2010 compliance.

Stainless Tailpipe - Curb Side - 90° Exit - 45° Cut End

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 at a 45° to the exhaust pipe centerline.

The pipe shall be unpolished stainless steel.

DEF System - EPA10

DIESEL EXHAUST FLUID SYSTEM

The chassis shall be equipped with a Diesel Exhaust Fluid system for EPA 2010 compliance.

Allison 3000EVS Automatic Transmission

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.

Transmission Fluid - Allison TES-389

TRANSMISSION FLUID

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

Five Speed Allison Programming - 3000EVS

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.

1760 Series Drivelines

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.

Temporary Installed Drivelines

TEMPORARY DRIVELINE INSTALLATION

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

Fuel Tank - 50 Gallon

FUEL TANK

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

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

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

Reinforced Fuel Lines

FUEL LINES

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

Fuel Filter - Cummins - Factory

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.

320 Amp Alternator - Leece-Neville - 4890JB

ALTERNATOR

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

3/16" Aluminum - MFDxl - Spectr Tilt Cab - 12" Raised Roof

FIRETRUCK CAB

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

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

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

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

CAB MATERIALS AND CONSTRUCTION

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

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

Roof Rail Section Extending from the front to the rear of the cab above the doors the cab shall have 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 B-Post The box assembly design of the rear door B-post provides an anchor for the rear door latch assembly. This section is the main vertical support at the cab rear corner providing the anchor point for the rear wall structural lattice network.

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

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

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

CAB DIMENSIONS

The cab shall have the following overall dimensional requirements:

- Overall Width - 100 inches
- Roof - 12" Raised
- Center of front axle to back of cab - 60 inches
- Center of front axle to front of cab - 74 inches
- Windshield area - 3,756 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum
- Cab full tilt height - 185 inches maximum

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

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

CAB DOORS

The cab entry and egress shall be designed for a firefighter in full turnout gear. Each door shall open a minimum of ninety

degrees to afford the firefighter maximum space.

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

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

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

FRONT DOORS

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

REAR CAB DOORS

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

INTERIOR DOOR LOCKS

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

DASH TRIM

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

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

CAB GLASS

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

All glass shall be tinted.

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

SUNVISORS

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

17-1/2" by 9".

DRIVER SIDE ELECTRICAL CABINET

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

WINDSHIELD WIPERS

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

STEERING WHEEL AND COLUMN

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

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

FASTENERS

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

BATTERY ACCESS

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

CAB CORROSION TREATMENT

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

Transmission Selector - Lever Type

TRANSMISSION RANGE SELECTOR

The transmission shall be controlled by an electro-mechanical lever type shift control. It shall be internally illuminated for night operation and have an internal lock (hold override button) to securely hold the shifter in the position selected.

Transmission Fluid Check - Transmission Selector

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.

EMI/RFI Noise Supression

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.

Stainless Steel Battery Trays

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.

Single Battery System - 4 Group 31

BATTERY BANK

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

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

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

BATTERY CABLES

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

STARTING CIRCUIT

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

40 Amp - Battery Charger - ProTech-4 1240

BATTERY CHARGER

A PRO MARINER / ON BOARD SOLUTIONS, PRO TECH-4, 1240, advanced electronic 4-step battery charger/power supply with a 40 amp output shall be installed, under the driver's seat.

Since shoreline power is not always stable the charger shall be equipped with Auto-Ranging AC Input to automatically accept global voltages of 90 VAC to 270 VAC at 45-440 Hz.

Field Selectable - Use with lead/acid or gel batteries (AGM factory option). Select length of absorption charge cycle based on size of batteries.

In the 4-step charging system the charger will provide the following sequence.

Step 1: Fast Charge - Charger will deliver its maximum amperage rating to the connected batteries for the fastest charge (current regulation mode) until battery voltage is raised to 14.6V (lead acid factory setting). At this time, the ProTech will shift to step 2.

Step 2: Absorption Charge - Maximizes charge and holds voltage (voltage regulation mode) at 14.6V (lead acid factory setting) for 1 to 4 hours (selectable based on battery size), while letting the batteries determine the amount of amps they can accept. This mode creates activity in the batteries, reducing sulfate buildup, and conditions the batteries for an extended life. After the programmed 1 to 4 hours have elapsed, the ProTech will shift to step 3.

Step 3: Float Mode - A precision 13.3V (lead acid factory setting) finishing voltage that maintains each battery (step-down voltage regulation mode), which is perfect for short or long storage periods and will never overcharge your batteries. ProTech will deliver its full rated output for house loads including: lighting, electronics and pumps.

Step 4: Recycle - If there are very large loads on the battery while the charger is on, the unit will recycle to the first step, ensuring that batteries stay fully charged.

One-Year Warranty - Includes lifetime repair guarantee.
Certified to - UL Marine 1236/SA

Kussmaul 91-94-12 Remote Charge Indicator - ProTech Charger
REMOTE CHARGE INDICATOR PANEL

A KUSSMAUL 91-94-12 charge indicator shall be supplied.

Remote Charge Indicator Panel - Dash Mounted

The remote charge indicator shall be installed with a Kussmaul 091-91-013 ABS housing located on the doghouse facing forward so the charge rate can be seen from outside the front of the vehicle.

Kussmaul 20 AMP - 120v - Super Auto Eject
SHORELINE AUTO-EJECT

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

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

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

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

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

Cab Exterior Mounted - Behind the Driver's Door
The Auto Eject assembly shall be mounted on the exterior of the cab behind the driver's door.

Battery Jumper Studs
BATTERY JUMPER STUDS

Battery jumper studs shall be provided on the chassis. The jumper studs shall be mounted underneath the cab, on the

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

Engine Enclosure - Vinyl Covering

ENGINE DOGHOUSE

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

The under side 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 an overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

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

ACCESS FOR FLUID SERVICING

The engine enclosure shall have a hinged and latched panel to provide access to the engine lubricating oil dipstick, power steering fluid reservoir dipstick and engine coolant recovery reservoir. This access shall allow that these fluid levels can be checked and topped off, if required, without raising the cab.

Brushed Stainless Interior Door Panels

CAB DOORS - INTERIOR TRIM

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

Interior Padding - Standard Ceiling

INTERIOR CEILING PADDING AND TRIM

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

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.

Floor Material - Accoustical 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.

Cab Door Reflective Material - Chevron

CHEVRON - INTERIOR CAB DOOR

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

Cab Door Interior Warning Lights - Red LED
LED WARNING LIGHTS - INTERIOR CAB DOOR

Each cab door shall have a PowerArc, model PP4, four (4) inch diameter red flashing LED warning light recess mounted in the lower section of the door. These warning lights shall be wired so all lights illuminate when any cab door is opened.

Cab Step Well Trim - Step Tops and Toe Kick Area
INTERIOR CAB STEP TRIM

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

Grab Hndls - Inside - Officer's A-Post and Both Crew Doors
GRAB HANDLES

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

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

Officer's Radio Compartment With Door
RADIO COMPARTMENT WITH DOOR

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

Full Width Intermediate Front Step - 100" Cab
CAB STEP DIMENSIONS

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

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

INTERMEDIATE CAB STEP

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

INTERIOR CAB STEP TRIM

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

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

Cab Crew Area Foot Rest - 100" Cab

REAR SEAT FOOT REST

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

Open Compartment Light - Red Flashing - Whelen OS LED

COMPARTMENT OPEN LIGHT

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

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

The compartment open 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**'.

Interior Lighting Group - Spectr

INTERIOR CAB LIGHTING

Standard Dome Lights - Spectr

DOMES LIGHTS

Two (2) seven inch clear dome lights shall be supplied. One light shall be installed in the front of the cab centered over the engine doghouse. One light shall be installed centered over the rear crew area. These lights shall be illuminated when any door is open or individually operated with a switch mounted on the light and the battery switch is in the on position.

Three (3) 7" Red Dome Lights

RED DOME LIGHTS

Three (3) seven inch diameter red dome lights shall be supplied. These lights shall be operated individual switches mounted on each light.

One (1) light shall be installed in the front of the cab adjacent to the officer. Two (2) lights shall be installed one each side of the rear crew area.

Maplight - Federal Signal LF12ER

OFFICER MAPLIGHT

A Federal Signal LF12ER maplight shall be mounted on the A pillar on the Officer's side of the cab.

In-Dash Heater / Defroster with Floor Heat - Spectr

CAB HEATER / DEFROSTER

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

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

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

control center.

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

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

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

Defroster Fans - Overhead Mounted

DEFROSTER FANS

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

45,000 BTU Air Conditioning with Heater - Single Condenser

45,000 BTU AIR CONDITIONING

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

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

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

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

The air conditioning system shall use R134A freon.

36,000 BTU Supplemental Heater

36,000 BTU SUPPLEMENTAL HEATER

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

Cab Climate Control Insulation Package

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.

Driver Instrumentation (J1939) and Controls

DRIVER INSTRUMENTATION AND CONTROLS

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

Electronic speedometer with LCD odometer
Tri cluster gauge that includes:
 Electronic tachometer
 Engine coolant temperature gauge, with warning light and buzzer
 Engine oil pressure gauge, with warning light and buzzer
Transmission fluid temperature gauge, with warning light and buzzer
Two air pressure gauges, with warning light and buzzer
Voltmeter, with low voltage warning light and buzzer
Fuel level gauge

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

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

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

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

Keyless ignition switch with a green pilot light

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

Audible Turn Signal Reminder
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.

Audible Lights On Reminder
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.

Audible Parking Brake Reminder
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.

Dual Trip Odometers
DUAL TRIP ODMETERS

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independent operation

and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

Odometer Activated While in Pump Mode
SPEEDOMETER ACTIVATED IN PUMP MODE

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

Low Fuel Warning Light and Alarm
LOW FUEL LIGHT

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

Transmission Temperature Warning Light and Alarm
TRANSMISSION OVERHEAT WARNING LIGHT

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

Low Voltage Warning Light
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.

Air Cleaner Restriction Indicator
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.

Low Coolant Warning
LOW COOLANT WARNING

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

Wiper Control, Intermittent
INTERMITTENT WIPER CONTROL

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

Control Center SPS Panel - Multiplexed
CONTROL CENTER

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

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

The apparatus parking brake control valve shall be located on the doghouse mounted control center. The parking brake control valve shall be able to be controlled by the officer in the event of an emergency.

SWITCH PANEL

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

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

Apparatus Base Digital Electrical System - Class1 EsKey

MULTIPLEXED ELECTRICAL SYSTEM

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

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

- *Universal System Manager (USM)* - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.
- *Power Distribution Module(s) (PDM)* - The PDM shall be a control device on the network with a primary function as power distribution. Receiving control signals from the USM the PDM turns on and off relays providing power to its connected loads. The PDM also shall contain digital switch inputs allowing for input clustering throughout the apparatus.
- *Information Display Module* - for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.
- *Input / Output Module* - The module shall have 16 inputs to communicate with the USM and 3 outputs for various chassis functions.

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

CHASSIS COLOR CODED WIRING

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

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

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

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

ELECTRICAL SYSTEM CONNECTORS

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

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

heat shrink tubing.

12 VDC Power Point Triple Outlet

12VDC TRIPLE POWER POINT

A triple outlet 12 volt, socket (cigarette lighter) type, receptacle shall be provided.

Battery Switched Power

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

Location - Top of AC Unit

The power point socket shall be provided on the top of the cab AC evaporator facing forward.

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.

Location - Officer's Seatbox

The radio / accessory power circuit shall terminate in the officer's seatbox.

NMO Mount - Radio Antenna Wiring - Officer's Side Forward

RADIO ANTENNA MOUNT WIRING

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

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

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

Location - Officer's Seatbox

The antenna wiring shall terminate in the officer's seatbox.

AM/FM Stereo CD/Weather Band Radio w/Four Speakers

PUBLIC BROADCAST RADIO

The cab shall be equipped with an AM/FM CD Stereo Radio with four ceiling mount recessed speakers. The radio shall also include a seven channel weather band.

Fire Extinguisher and Hazard Triangle Kit

ROAD SAFETY KIT

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

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

Cab Crashworthiness Test

CAB CRASHWORTHINESS TEST

Dynamic tests shall be performed to evaluate the crashworthiness of the proposed vehicle cab configuration to the

requirements of NFPA 1901-09 section 14.3.2.

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

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

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

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

Exterior Grab Handles - 24" Long

EXTERIOR GRAB HANDLES

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

3-Dimensional Stainless Front Grille

"1871 SERIES STYLE" FRONT GRILLE

A stainless steel square, three dimensional bright polished stainless steel front grille shall be installed on the front cab face. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

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

Cab Front Mudflaps

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.

Cab Ground Lights

CAB GROUND LIGHTING

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

Lang Mekra Heated and Remote Controlled Mirrors w/Convex

MIRRORS, HEATED REMOTE

The cab mirrors shall be Lang Mekra 300 Series Aero mirrors with a break-away bracket. The flat glass head shall be heated and remote control with the convex heated. The mirror heads shall have a textured chrome plated high impact non-metallic housing.

LED Turn Signal in Convex

An LED turn signal shall be supplied in the convex mirror glass.

Cab Side Windows - Fixed Glass

CAB SIDE WINDOWS

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

Rear Window Safety Bars

REAR WINDOW SAFETY BARS

There shall be a one inch stainless steel grab bar installed on each rear door. This bar is to be installed on the rear door frame even with the window in the down position to prevent firefighters from using the glass in the door for a handle.

Dark Gray-Lite Door Glass - Cab Side and Crew Doors

WINDOW TINTING

The cab side and crew door windows shall have GRAY-LITE 14 tint to provide privacy and to assist in reducing the amount of heating inside the cab due to direct sunlight and unwanted glare.

Engine Maintenance Lights - Custom

UNDER CAB ENGINE MAINTENANCE LIGHTS

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

Cab Lower Side Bright Stainless Trim - 2 Inch

SIDE STAINLESS STEEL TRIM

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

Cab Stainless Fender / Stainless Wheel Well Liner

WHEEL WELL LINERS

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

STAINLESS CAB FENDERETTES

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

Exterior Rear Wall - Diamondplate Overlay

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

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

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 one (1) inch diameter cab pivot pins shall be installed at the front of the cab.

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

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

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

Cab Tilt Road Interlock **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.

Black Gloss Enamel Painted Frame **CHASSIS PAINT**

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

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

Premium Interior Paint & Trim Package **SELECT INTERIOR**

The cab shall be provided with an automotive styled top of the line interior. The seats shall have a select design with red vinyl and black durable polyester material.

The cab doors shall have custom padded insert with the embroidered "Select" design.

The overhead console shall have a custom designed oval model designation logo.

INTERIOR FINISH AND APPOINTMENTS

The entire 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.

Headliner - Black

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

Rear Wall Covering - Black

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

Floor Covering - Black

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

Doghouse Covering - Black w/Red Sticking - Select

The doghouse vinyl covering material in the cab shall be black in color with red stitching.

Seat Covers - Black / Red - Select Interior

The seats in the Select Interior shall be of red / black material.

- All Seating

The seats shall be black in the following applicable areas.

- Seat Base Sides
- Seat Base Front
- Seat Base Top - Outer Bolsters
- Seat Back Support Face - Outer Bolsters
- Seat Back Support Sides
- Seat Back Rear
- Seat Headrests - SCBA Seats

The seats shall be flame red in the following applicable areas.

- Seat Back Center Insert
- Seat Base Top Center Insert
- Seat Headrest - Non SCBA Seats

^^Select Interior - Red/Black Imperial 1200 and Vinyl Seats

SELECT INTERIOR TREATMENT

The seats in the Select Interior shall be of red / black material.

- All

Seating

The seats shall be black Imperial 1200, durable polyester in the following areas.

- Seat Base Sides
- Seat Base Front
- Seat Base Top - Outer Bolsters
- Seat Back Support Face - Outer Bolsters
- Seat Back Support Sides
- Seat Back Rear
- Seat Headrests - SCBA Seats

The seats shall be flame red vinyl in the following areas.

- Seat Back Center Insert
- Seat Base Top Center Insert
- Seat Headrest - Non SCBA Seats

Two-Tone Cab Exterior Paint

CAB EXTERIOR FINISH

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

The two tone, 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 manufacturers directions.

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

Cab Exterior Paint - Dupont - Urethane
Dupont Imron will be used for the cab exterior material.

5 Year Cab Paint Warranty
5 YEAR CAB PAINT LIMITED WARRANTY

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the painted cab (the "cab"), shall under normal use and with normal maintenance remain free from paint defects for a period of five (5) years from the date that the motor vehicle was first placed in service. A painted cab shall be considered to have "paint defects" if it is found by the manufacturer to have any loss of gloss, color retention, cracking, blistering, bubbling or flaking under normal use and with normal maintenance. The warranty shall provide for repair or replacement, at the manufacturer's option, any claim in accordance with the following terms and conditions.

WHAT IS COVERED

Warranty Applies - This warranty is for all new fire and rescue cabs and is extended only to the original user-purchaser. The warranty registration must be received by the cab & chassis manufacturer within 30-days of the in-service date for the warranty to apply.

Repairs Covered - The warranty covers repair or replacement, at the manufacturer's option. Repairs shall be made at the manufacturer's factory or an approved service facility at the manufacturer's option.

Obtaining Repairs - The original user-purchaser must notify the cab & chassis manufacturer in writing within 30 days after any claimed defect has appeared. Transportation costs to and from the service center shall be the responsibility of the user-purchaser. In the case of warranty claim, repair of all non-warranty blemishes shall be negotiated prior to the warranty refinish or repair. Transportation of the vehicle to the factory authorized repair center shall be the responsibility of the owner.

Warranty Period - The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. The following percentages apply:

Top Coat and Appearance Gloss, Color Rentention, Cracking	Coating System, Adhesion, Flaking, Blistering, Bubbling
0 to 60 months 100%	0 to 36 Months 100%
	37 to 60 Months 50%

WHAT IS NOT COVERED

- Damage caused by fire, misuse, negligence or accident.
- Damage caused by theft, vandalism, riot or explosion.
- Damage caused by lightening, earthquake, windstorm, hail, flood or use in acidic environment.
- Any repairs, modifications, alterations, or after market parts added after manufacture without the authorization of the cab & chassis manufacturer.
- Damage from lack of or poor maintainance and cleaning.
- Gold leaf or striping except that which is affected by repair. (Gold leaf or striping must have been installed during manufacture to be covered under this limited warranty.)
- Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from failure.
- UV Paint Fade
- Components not painted by the cab & chassis manufacturer are covered by the respective manufacturers warranty.

Two-Tone Cab Breakline Stripe - Black

STRIPE

A 1/8" wide black paint pin stripe shall be added to the cab, two tone paint scheme. This stripe shall be applied at the breakline.

Seat Position 1 - Driver's Seat

DRIVER'S SEATING POSITION

Highback - Air Ride Suspension - Seats, Inc.

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

Red - Shoulder Harness - Seat Belt

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

Seat Position 2 - Officer's Seat

OFFICER'S SEATING POSITION

SCBA Split Head Rest - Fixed Mounting - Seats, Inc.

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest. The seat shall contain a SCBA filler pad for when the bottle is not in use.

Red - Shoulder Harness - Seat Belt

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

Zico SCBA Bottle Bracket - QLM-U - Chassis

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, (SCBA) self-contained breathing apparatus brackets mounted in the cab.

Upper SCBA Release Mechanism - Ziamatic USM

The WALKAWAY brackets shall included a pull release mounted in the upper portion of the seat.

Seat Position 3 - Rear Facing Left Outboard - Behind Driver

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

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

~Red - Shoulder Harness - Seat Belt

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

Zico SCBA Bottle Bracket - QLM-U - Chassis

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, (SCBA) self-contained breathing apparatus brackets mounted in the cab.

Upper SCBA Release Mechanism - Ziamatic USM

The WALKAWAY brackets shall included a pull release mounted in the upper portion of the seat.

Filler Pad for 911 SCBA Seats

SCBA FILLER PADS

The 911 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.

Seat Position 6 - Rear Facing Rt Outboard - Behind Officer

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

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

~Red - Shoulder Harness - Seat Belt

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

Zico SCBA Bottle Bracket - QLM-U - Chassis

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, (SCBA) self-contained breathing apparatus brackets mounted in the cab.

Upper SCBA Release Mechanism - Ziamatic USM

The WALKAWAY brackets shall included a pull release mounted in the upper portion of the seat.

Filler Pad for 911 SCBA Seats

SCBA FILLER PADS

The 911 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.

Seat Position 8 - Fwd Facing - Left Inside

CREW AREA - FORWARD FACING LEFT INBOARD SEAT POSITION

SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

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

Red - Shoulder Harness - Seat Belt

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

Zico SCBA Bottle Bracket - QLM-U - Chassis

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, (SCBA) self-contained breathing apparatus brackets mounted in the cab.

Upper SCBA Release Mechanism - Ziamatic USM

The WALKAWAY brackets shall included a pull release mounted in the upper portion of the seat.

Filler Pad for 911 SCBA Seats

SCBA FILLER PADS

The 911 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.

Seat Position 9 - Fwd Facing - Right Inside

CREW AREA - FORWARD FACING RIGHT INBOARD SEAT POSITION

SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

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

Red - Shoulder Harness - Seat Belt

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

Zico SCBA Bottle Bracket - QLM-U - Chassis

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, (SCBA) self-contained breathing apparatus brackets mounted in the cab.

Upper SCBA Release Mechanism - Ziamatic USM

The WALKAWAY brackets shall included a pull release mounted in the upper portion of the seat.

Filler Pad for 911 SCBA Seats

SCBA FILLER PADS

The 911 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.

Forward Facing Seat Riser

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.

Seat Covers - Black / Red - Select Interior

The seats in the Select Interior shall be of red / black material.

- All Seating

The seats shall be black in the following applicable areas.

- Seat Base Sides
- Seat Base Front
- Seat Base Top - Outer Bolsters
- Seat Back Support Face - Outer Bolsters
- Seat Back Support Sides
- Seat Back Rear
- Seat Headrests - SCBA Seats

The seats shall be flame red in the following applicable areas.

- Seat Back Center Insert
- Seat Base Top Center Insert
- Seat Headrest - Non SCBA Seats

^^Select Interior - Red/Black Imperial 1200 and Vinyl Seats

SELECT INTERIOR TREATMENT

The seats in the Select Interior shall be of red / black material.

- All

Seating

The seats shall be black Imperial 1200, durable polyester in the following areas.

- Seat Base Sides
- Seat Base Front
- Seat Base Top - Outer Bolsters
- Seat Back Support Face - Outer Bolsters
- Seat Back Support Sides
- Seat Back Rear
- Seat Headrests - SCBA Seats

The seats shall be flame red vinyl in the following areas.

- Seat Back Center Insert
- Seat Base Top Center Insert
- Seat Headrest - Non SCBA Seats

Seat Belt Warning Labels

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.

Vehicle Data Recorder and Seat Belt Warning System

VEHICLE DATA RECORDER

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

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

SEAT BELT WARNING SYSTEM

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

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

Seat Belt Warning System Monitor Panel
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.

Front Bumper - 12" High - Polished Stainless - Chassis
FRONT BUMPER

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

Front Bumper Extension - 21 Inches
BUMPER EXTENSION

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

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

Chromed Tow Hooks Beneath Bumper
TOW HOOKS

Two (2) chromed 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 Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

Front Gravelshield
GRAVELSHIELD

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

Center Hosewell
CENTER HOSEWELL

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

Hosewell Cover - Hinged Diamondplate
HOSEWELL COVER

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

Open Grate Mat, Hosewell
OPEN GRATE MAT - HOSEWELL

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

Electronic Back-Up Alarm

BACK-UP ALARM

An electronic backup alarm shall be installed on the rear of the apparatus and wired to the back-up light circuit. A minimum decibel rating of 97 dba is required.

Dual Stutter Tone Air Horns - Bumper Recessed

AIR HORNS

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

Air Horn Circuit Powered - Battery and Ignition

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.

Air Horn Control - Lanyard

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.

Air/Elec Horn-Strg Wheel Cntrl - {Siren Switch Upgrade Here}

AIR HORN OPERATION

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

Electronic Siren - Whelen - Model 295SLSA1

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.

The siren shall be wired to provide hands free operation from the steering wheel button.

Siren Head Mounting - Doghouse Mounted

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

Siren Speakers - Two - Cast Products - Recess Mtd

SIREN SPEAKERS

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

Chassis Operator's Manual w/Parts List - One Set

CHASSIS OPERATOR'S MANUAL

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

An electronic Electrical System Manual shall be provided.

- This manual shall provide complete wiring schematics for the vehicle.
- The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided.

- This manual shall provide complete air system schematics for the vehicle.
- The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

Meritor Axle Warranty

MERITOR/ROCKWELL STANDARD AXLE WARRANTY

The Meritor/Rockwell axle shall have a five (5) year unlimited mileage parts and labor warranty that is in effect at the time of the vehicle is placed into service.

Allison Transmission - 5 Year EVS Warranty

STANDARD TRANSMISSION WARRANTY

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

Engine Warranty - 5 Year

ENGINE WARRANTY

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

Cab Structural Warranty - Ten Years

CAB STRUCTURAL WARRANTY

HME, Inc. warrants the cab of each chassis shall be free of structural or design failure or workmanship for a period of ten (10) years from the date the chassis is put into service by the end user. This warranty is extended to the original purchaser only and terminates upon transfer of ownership or possession to any other entity.

A cab is defined as the structure which fabricated from aluminum sheet metal and the associated framework that comprises the area where the driver, passengers and controls are located. This warranty is strictly limited to the cab as defined above and excludes all hardware, mechanical items, electrical items or paint work.

This warranty is expressly limited the repair and/or replacement of defective items as HME may elect upon examination of any defects in material or workmanship. This warranty covers only labor for repair or replacement which is reasonably necessary as determined by HME. All repairs must be expressly approved in writing by the HME warranty department prior to any work being performed. The failure to obtain approval for repairs from HME or to have the cab repaired or replaced at HME or a place designated by HME shall void this warranty. Any repair or replacement performed by HME pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.

HME's obligation to render any repairs under this warranty is subject to the following conditions in their entirety:

- a) The claimed failure must be reported to HME, Inc within the above stated warranty period.
- b) The claimed defective cab must be returned to HME or an authorized HME warranty service center immediately after notification of HME. Transportation costs shall be the responsibility of the purchaser as shall any charges for driver's, loading, unloading, or other costs associated with the transportation of the chassis.
- c) HME shall then have the unconditional right to examine the cab to determine if the claimed defect falls within the scope of this warranty.

This warranty shall not cover the following:

- a) Damage caused by fire, misuse, neglect or accident.
- b) Damage caused by theft, vandalism, riot, or explosion.
- c) Damage caused by acts of God such as lightning, flood, hurricane, etc.
- d) Damage that may or may not, at HME's discretion, be caused by or associated with unauthorized repairs or modifications.
- e) Damage that may or may not, at HME's discretion, be caused by or associated with de-icing compounds or an acidic environment.
- f) Damage that may or may not, at HME's discretion, be caused by or associated with lack or improper maintenance procedures.
- g) Loss of time, loss of use of the chassis, inconvenience, lodging, food, or other consequential loss that may result from the claimed failure of the repair and claim procedure.
- h) Ordinary maintenance.
- i) Cracks that are of a non-structural nature.
- j) Buckling, bending, bulging or other metal deformities that are not related to a structural defect as determined by HME.

This warranty is expressly in lieu of all other warranties, expressed or implied.

This warranty protection plan issued to:

 (City, Township, District, etc.)

 (HME Authorization)

Corrosion Perforation Warranty - Ten Years

CAB CORROSION WARRANTY

The cab shall have a ten (10) year cab corrosion perforation warranty according to the terms and conditions outlined in the warranty statement.

Cab & Chassis Warranty - One Year

CAB & CHASSIS WARRANTY

The chassis shall have a one (1) year warranty according to the terms and conditions outlined in the New Product Limited Warranty.

Custom Cab - Cab - LED - ICC Lighting - Whelen OS Series

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield. These lights are to be mounted in a chrome flange.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the front door. These lights are to be mounted in a chrome flange.

An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

Headlights - Halogen - Daytime Running - Custom Cab
HEADLIGHTS

Four (4) rectangular halogen headlights shall be supplied mounted in a chrome plated bezel.

When the parking brake is released and the master battery switch is in the on position, the head lamps shall be illuminated to 80% brilliance.

Cab Side Turn Signal, Whelen LED, Wheelwell Mounted
SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the front wheel well area. The lights shall be mounted in a chrome flange.

Back Up Alarm
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.

Frnt Turn Signal - FedSig - LED - Outside HdLts - Custom Cab
TURN SIGNALS

Two (2) rectangular Federal Signal, model QL64Z-TURN, LED turn signal lamps shall be mounted outboard of the front headlights on each side. These lights shall be amber in color.

Lightbar, Frnt, PowerArc - XT - LED
CAB FORWARD ROOF MOUNTED LIGHTBAR

One (1) PowerArc, model LED-XT76LB-RCRRCR, 76" light bar shall be mounted on the cab roof. The light bar shall be equipped with ten (10) elements, two (2) 50 watt halogen elements behind the clear positions of the light bar and eight (8) LED elements at remaining positions.

This light bar fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the "Blocking Right of Way" mode.

Cab, Lwr, Frnt, PowerArc - LED210 - LED
LOW LEVEL WARNING LIGHTS

Two (2) PowerArc LED warning lights, model LED210, shall be mounted on the front of the chassis above the headlights at the upper outermost corners in vertical position.

These two (2) lights fulfill the requirements for Lower Zones A, B & D lower level warning devices.

Lens Color - Both Red

Both warning light lenses shall be red in color.

Cab, Side Over Wheel, Whelen LED

CAB SIDE WARNING LIGHTS

Two (2) Whelen, model RSR02ZCR, linear red LED, shall be mounted one (1) on the driver's side and one (1) on the officer's side of the vehicle, over the front tires, placed no greater than 25 feet between the front and rear lower warning lights. The lights shall be mounted in a chrome flange.

These lights fulfill the requirements for midship lights in Lower Zones B and D.

High Beam Alternating Headlights

ALTERNATING HEADLIGHT WARNING

The headlights shall be provided with an alternating headlight feature.

When the High Beam is selected the headlights shall become a standard high beam.

Any clear warning light(s) shall be disabled automatically for the "Blocking Right of Way" mode.

A cut off switch shall be supplied to turn off the alternating headlight function.

SPECTR Raised Roof - Cab Side Scene Lights Required

CAB SIDE SCENE LIGHTS

There shall be side scene lights installed on the side of the cab between the front and rear cab doors on the raised roof section.

Scene Lights, Whelen - 900 - 50 Watt 7" x 9" w/Chrome Trim

The lighting positions shall have two (2) Whelen model 90E000ZR, 7" x 9", 50 watt scene lights with internal optics of 8-32 degrees and a Whelen chrome trim ring.

Driver's Scene Light Switch

The scene lights shall be operated by a switch located in the driver's area of the cab.

Cab Scene Light Door Switch

The scene light on the side of the cab shall be operated by either the front or the rear door on the same side of the cab opening.

CLEAN ORDER RELEASE 2/26/10