

# Portage

## Bidder Complies

This warranty does not apply to:

- A. Corrosion originating from within the apparatus.
- B. Hazing of the paint caused by improper abrasive detergents, or by incidental chemical exposure.
- C. Scratches, abrasions, or stone chips caused intentionally or accidentally.
- D. Homogenous darkening of the finished color.
- E. Blemishes or blistering caused by corrosion originating from within the apparatus.
- F. Blistering or peeling of lettering, and stripping.
- G. Multistage fluorescent finishes.
- H. Accidents.

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.

One (1)  
40-Q0-10

### **BLACK GLOSS ENAMEL PAINTED FRAME**

Y\_\_N\_\_

#### CHASSIS PAINT

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

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

One (1)  
40-Q0-12

### **BLACK INTERIOR PAINT & VINYL**

Y\_\_N\_\_

#### INTERIOR FINISH

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 shall be sanded to a smooth finish ready for final color coat application.

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

The following interior components shall be in covered in black vinyl to match the interior paint color:

- All seating

# Portage

## Bidder Complies

- Headliner
- Rear wall padding
- Door panels-ABS
- Doghouse covering
- Floor covering (mats)

One (1)  
40-Q0-16

### TWO-TONE COLOR CAB EXTERIOR PAINT

Y\_\_N\_\_

#### CAB EXTERIOR FINISH

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

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

#### PREPARATION

The removal of all contaminants 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 pre-treat/primer one product application shall not be allowed as a substitute.

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

# Portage

## Bidder Complies

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 precoat 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 one of one or two applications of acrylic urethane color coat. The final finish shall be free of dirt and sags and shall meet a minimum grade of 5 when compared to the "ACT" general orange peel standards by "ACT" Laboratories, Inc. Of Hillsdale, MI.

One (1)  
40-Q0-18

**EXTERIOR PAINT OTHER THAN DUPONT**

Y\_\_N\_\_

EXTERIOR PAINT OTHER THAN DUPONT

The exterior of the cab shall be painted with paint other than Dupont:

One (1)  
40-R0-12

**MAP BOX**

Y\_\_N\_\_

MAP BOX

A map box with the bins open from the top, shall be installed on the engine doghouse, as far back as possible facing the officer. The map box shall be divided into 3 bins, **inside** dimensions being 12-3/4" long x 4-1/2" wide x 8" deep. The map box shall be constructed of .125 aluminum and shall be painted to match the cab interior. The installation of the map box shall not obstruct the driver's side view of the right side mirror.

One (1)  
40-R0-20

**ACOUSTICAL FLOOR MATTING**

Y\_\_N\_\_

FLOOR COVERING

# Portage

## Bidder Complies

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

One (1)  
40-SA-01

### SEAT BELT WARNING SIGNS

Y\_\_N\_\_

### SEAT BELT WARNING LABELS

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

One (1)  
40-SI-00

### SEATS, INC. 911 LOWBACK AIR DRIVER'S SEAT

Y\_\_N\_\_

### DRIVER'S SEAT

The driver's seat shall be a Seats, Inc. 911 air ride driver's seat. The seat shall be of the low-back style. The seat shall have adjustments for height and ride adjustment. The fore / aft adjustment of the seat shall be six (6) inches and contain a fore / aft shock absorber. The bottom seat cushion shall contain a contoured thigh support. The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SI-14

### SEATS, INC. LOWBACK NON SUSPENSION OFFICER'S

Y\_\_N\_\_

### OFFICER'S SEAT

A SEATS, INC., 911 non-suspension fixed officer's seat shall be supplied. This seat is to be of the low-back style. The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SN-08

### SEATS, INC TWO OUTBOARD REAR FACING SCBA

Y\_\_N\_\_

### OUTBOARD REAR FACING SCBA CANOPY SEATS

The two (2) rear facing canopy seats shall be SEATS, INC. 911 Series Self-Contained Breathing Apparatus (SCBA) type seats. These seats shall have split head rest.

The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SX-90

### SEAT BELTS FOR CAB

Y\_\_N\_\_

### SHOULDER HARNESS

Shoulder harness seatbelts for Driver/Officer positions shall be provided.

All rear facing seating positions shall be provided with lap type, metal to metal quick release seat belts, with automatic seat belt retraction.

The forward facing crew area seats shall be provided with shoulder harness seatbelts.

The seat belts shall be black in color.

# Portage

## Bidder Complies

Two (2)  
40-SX-92

### 3-POINT SEATBELTS PAIR FOR REAR FACING SEATS

Y\_\_N\_\_

#### SHOULDER HARNESS

Two (2) shoulder harness seatbelts shall be supplied for the rear facing seats in the crew area. The shoulder harnesses shall be black in color.

Two (2)  
40-U0-20

### TWO (2) 6" WINDSHIELD DEFROSTER FANS MOUNTED

Y\_\_N\_\_

#### DEFROSTER FANS

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

One (1)  
40-UA-40

### 40,000 BTU AIR CONDITIONING W/HEATER

Y\_\_N\_\_

#### 40,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 40,000 BTU air conditioning evaporator with a 36,000 BTU auxiliary heater.

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 air conditioning condenser mounted in a concealed location ahead of the radiator. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from contaminates, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The air conditioning evaporator shall be centrally mounted on the rear of the engine enclosure in the cab. 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 onoff switch, thermostat control, and blower switches shall be located on the evaporator unit.

The air conditioning system shall use R134A freon.

#### 36,000 BTU AUXILIARY HEATER

A 36,000 BTU auxiliary heater is also to 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 INSULATION

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

# Portage

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material shall be compliant with FMVSS-302.

One (1)  
40-V0-01

### DRIVER INSTRUMENTATION AND CONTROLS

Y\_\_N\_\_

#### DRIVER INSTRUMENTATION AND CONTROLS

The cab dash panel shall have black textured anti-glare surface. This panel shall have a wrap around feature for easy viewing of the instrumentation. The dash panel shall be a three piece design. Each panel shall be removable for access to the gauges and wiring. The instrument panel shall include the following gauges and indicators.

Electronic tachometer

Electronic speedometer with **trip odometer**

Engine coolant temperature gauge, with high temperature warning light and buzzer

Engine oil pressure gauge, with warning light and buzzer

Transmission fluid temperature gauge, with high temperature warning light and buzzer

Dual needle air pressure gauge with low air pressure warning light and buzzer

Voltmeter

Fuel level gauge

Engine hourmeter

Air cleaner restriction indicator light

High beam indicator light

Parking brake set light

Turn signal indicator lights

"Cab Door Open" indicator light

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

# Portage

## Bidder Complies

control panel shall include the following:

Keyless ignition switch with a green pilot light

Parking brake control valve

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 can be utilized for the pump shift controls.

One (1)  
40-V0-23

### **LOW COOLANT LIGHT & ALARM**

Y\_\_N\_\_

#### LOW COOLANT ALARM

A low coolant light & alarm shall be furnished. A test button is not available.

One (1)  
40-V0-25

### **TRANSMISSION TEMPERATURE LIGHT & BUZZER**

Y\_\_N\_\_

#### TRANSMISSION OVERHEAT WARNING LIGHT

A Transmission temperature light & buzzer shall be provided on the dash panel.

One (1)  
40-V0-42

### **DEACTIVATE ODOMETER WHILE IN PUMPING MODE**

Y\_\_N\_\_

#### SPEEDOMETER DEACTIVATED IN PUMP MODE

The speedometer shall deactivate the odometer while in pumping mode.

One (1)  
40-V0-50

### **LOW VOLTAGE ALARM & LIGHT**

Y\_\_N\_\_

#### LOW VOLTAGE WARNING

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

One (1)  
40-X0-16

### **DOGHOUSE SWITCH PANEL 13 INDIVIDUAL 1 MASTER**

Y\_\_N\_\_

#### DOGHOUSE MOUNTED CENTER SWITCH PANEL

The apparatus warning light panel shall be mounted on the engine doghouse between the driver and the officer. The panel shall have a black anti-glare surface, and be angled for easy viewing of the driver. The panel shall include the following switches:

One (1) lighted master control switch to allow for preselection of the other switches.

Thirteen (13) lighted individual lighting control and chassis option switches.

Each switch shall have back-lit legends with a 100,000 hour lamp for illumination.

The master lighting control switch shall be wired to three (3) 30 amp circuit breakers and three (3) 40 amp relays. Three (3) 10 gauge wires are powered by this circuit and run to

# Portage

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the roof for lightbar power. The remaining switches shall be wired to 20 amp circuit breakers and relays.

One (1)  
40-X0-26

**CLASS ONE - TOTAL SYSTEM MANAGER**

Y\_\_N\_\_

TOTAL SYSTEM MANAGER

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have outputs to supply warning and load switching requirements.

Outputs 1-12 shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or warning master switch, or to sequence and shed along with the priority.

Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts.

The TSM shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

One (1)  
40-X0-32

**ONE INTERMITTENT WINDSHIELD WIPER SWITCH**

Y\_\_N\_\_

INTERMITTENT WIPER CONTROL

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

One (1)  
40-X0-39

**RADIO POWER CIRCUIT**

Y\_\_N\_\_

RADIO POWER CIRCUIT

A switch shall be wired into the main switch panel for use as a main power switch to activate the radio. This circuit shall include a 5 amp battery powered unswitched, a 30 amp battery powered switch with 10 gauge wire and a 10 gauge ground.

One (1)  
40-Z0-20

**FIRE EXTINGUISHER AND HAZARD TRIANGLE KIT**

Y\_\_N\_\_

ROAD SAFETY KIT

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

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

One (1)  
40-Z0-31

**AM/FM STEREO CASSETTE RADIO W/FOUR SPEAKERS**

Y\_\_N\_\_

PUBLIC BROADCAST RADIO

The cab shall be equipped with an AM/FM Cassette Stereo Radio with four (4) speakers.



# Portage

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One (1)  
45-A0-01

### EMI/RFI PROTECTION

Y\_\_N\_\_

#### EMI/RFI PROTECTION

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

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

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

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

One (1)  
45-D0-10

### 290 AMP NIEHOFF ALTERNATOR

Y\_\_N\_\_

#### ALTERNATOR

A 290 Amp NIEHOFF alternator shall be installed on the engine. The alternator shall be externally regulated.

One (1)  
45-NS-01

### APPARATUS BASE ELECTRICAL SYSTEM

Y\_\_N\_\_

#### CHASSIS ELECTRICAL SYSTEM

The apparatus "Electrical Distribution System" (EDS) shall be mounted inside the cab to prevent moisture from entering the area. It shall be mounted under the dash on the officer's side behind a diamond plate cover.

The EDS shall be fed by one power stud:

One (1) battery positive

The battery positive stud is to be controlled by the master disconnect switch mounted on the lower right dash panel. A green light shall indicate when the ignition circuit(s) are energized.

#### EDS MODULE

The EDS system shall be designed with locally available **plug-in** circuit breakers and **plug-in** relays. Each component position shall be labeled to indicate its function. All electrical connections shall be insulated and secured behind the panel face to eliminate the chance of accidental electrical shorts while performing electrical system service.

# Portage

Bidder Complies

The EDS shall control a minimum of thirteen (13) low voltage, analog switched, high amperage electrical loads.

Provision for a minimum of thirty-one (31) automatic reset circuit breakers is required to protect the vital circuits of the apparatus.

The EDS system shall be removable with only four (4) fasteners for major electrical service or modifications.

The EDS panel shall have one (1) lamp for illumination of the panel during service.

## 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.

## SINGLE BATTERY SYSTEM - 6 GROUP 31

### BATTERY BANK

A single battery system shall be provided, utilizing six (6) 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, 1996 edition S9-4.2).

A battery disconnect switch (Rated at not less than 250 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the battery bank is activated.

### BATTERY CABLES

One (1)  
45-NU-06

Y\_\_N\_\_

# Portage

Bidder Complies

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

STARTING CIRCUIT

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

One (1)  
45-TS-11

**BATTERY CHARGER - PUMP PLUS**

Y\_\_N\_\_

BATTERY CHARGER

The KUSSMAUL BATTERY CHARGER shall be permanently wired to the chassis batteries to provide battery charging and operation of the on board air compressor.

One (1)  
45-Z0-11

**KUSSMAUL 120 VAC RECEPTACLE**

Y\_\_N\_\_

120 VAC RECEPTACLE

A KUSSMAUL 120 VAC electrical receptacle connection shall be installed beneath the driver's seat next to the battery electrical disconnect switch.

One (1)  
50-W0-50

**TEN YEAR CAB STRUCTURAL WARRANTY**

Y\_\_N\_\_

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:

# Portage

## Bidder Complies

- 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)

One (1)  
61-C0-02

**OPERATOR'S MANUAL W/PARTS LIST-TWO SETS**

OPERATOR'S MANUAL

Y\_\_N\_\_

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

An electronic Electrical System Manual shall be provided.

# Portage

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

An electronic Air System Manual shall be provided.

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

One (1)  
65-40-15

### **RADIO ANTENNA WIRING**

Y\_\_N\_\_

### RADIO ANTENNA WIRING

One Motorola quarter wave antenna roof mount (does not include mast) shall be mounted behind the light bar. The coax is to be routed in the cab to the officer's seat box.

One (1)  
75-50-11

### **AERIAL INTERFACE**

Y\_\_N\_\_

There shall be a Aerial Electrical interface for the manufacturer added.

One (1)  
90-40-xa

### **6 ADDITIONAL SWITCHES**

Y\_\_N\_\_

There shall be (6) six additional switches in a switch panel.

# Portage

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weatherseal to prevent the influx of exterior air. The doors shall have exterior and interior paddle 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. Each door shall be of the flush mounted design having exposed, polished, one-piece, 12 gauge stainless steel piano hinges with 1/4" hinge pins.

The cab doors shall be covered with an automotive styled ABS panel that is covered with vinyl to match the interior trim color. The front door panels shall have map pockets in each door. The lower section of each door panel is to have a diamond plate insert providing a "kick plate" for the firefighter.

### 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 74" high x 30" wide and shall be a flush type door with exposed, polished, full length 12 gauge stainless steel piano hinges with 1/4" hinge pins. Each door shall have roll down rear windows. The rear doors shall have a minimum of 546 square inches of viewing area per door. Each window shall have an exterior glass weatherseal to prevent the influx of exterior air. The doors shall have interior and exterior paddle latches, and shall be mounted in an easy to reach location. Interior latch shall not be blocked by the seat occupant. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

### INTERIOR DOOR LOCKS

All doors shall have interior door locks and exterior keyed door lock controls. The door locks and the finished door assemblies 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.

### WHEEL WELL LINERS

To reduce road splash underneath the cab and allow for easy cleaning, bolt in ABS front wheel well liners are to be installed in the wheel wells. 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 across the top of the wheel openings. An extruded rubber gasket is to be installed between the fenderette and the cab to reduce the possibility of electrolysis between the dissimilar materials.

### INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. The toe kick surface and the horizontal step area shall be covered with aluminum treadplate trim.

# Portage

## Bidder Complies

### INTERIOR CAB TRIM

The cab front interior shall have a one-piece, removable, sound absorbing headliner to cover all wiring and tubing used for lights and antenna leads. The rear headliner shall be a two-piece design similar to the front.

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

The cab dash shall be an ABS automotive styled housing with vinyl covering. A locking ABS automotive styled glovebox with an 18" long grab handle for the Officer shall be furnished on the right hand side of the cab. The instrument and glovebox housings shall be symmetrical in design for a pleasant appearance. The glovebox shall be equipped with a cigar lighter socket with sufficient wiring to handle a 1,000,000 candlepower hand held spotlight. The glovebox shall also include an interior mounted, individually switched light.

### CAB GLASS

AS-1 safety laminate glass shall be used in a two piece, wrap around design with a minimum 3624 square inches of windshield area for maximum visibility.

The windshield shall be a type which is 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

Two (2) 17-1/2" by 9" black padded sunvisors shall be supplied, one on each side of the windshield. Vertical adjustment shall be a minimum of 15" to allow maximum coverage.

### RADIO / STORAGE COMPARTMENT

Beneath the officer's seat there shall be a storage/radio compartment approximately 19-1/2" wide x 17" long x 7" high. The compartment shall have a diamond plate door mounted on a piano hinge to prevent stored materials from spilling out. Access through this door shall be from the side of the seat box. An identical compartment shall be provided beneath the driver's seat with a bolt on louvered aluminum diamond plate cover on the front of the seat box.

### HEATER / DEFROSTER

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

### WINDSHIELD WIPERS

# Portage

## Bidder Complies

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. The reservoir shall be mounted inside the cab to eliminate the need to tilt the cab to fill it.

### 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 cancelling 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. The telescopic feature of the steering column shall be controlled by a lever on the left side of the steering column.

### EXTERIOR GRAB HANDLES

The cab shall have a bright anodized extruded aluminum 24" grab handle with extruded rubber inserts 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.

### 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 removeable kick panel, providing access to the batteries for routine maintenance and inspection.

### CAB CORROSION TREATMENT

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

One (1)  
40-DY-90

### ENGINE DOGHOUSE

Y\_\_N\_\_

### ENGINE DOGHOUSE

The doghouse door shall open 90 degrees from the rear and swing to the front of the cab. This door, shall be assisted by high temperature gas springs. The door shall be latched by a positive locking mechanism located on each side of the doghouse door. The doghouse door shall be seal-ed with the same sealing method as the exterior doors of the cab.

The engine doghouse inside the cab shall be padded with a layer of sound and heat



# Portage

## Bidder Complies

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

### 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. Access to the power steering fluid maybe limited.

### COOLANT RECOVERY SYSTEM

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

One (1)  
40-DZ-01

### **STAINLESS STEEL CAB GRILLE**

Y\_\_N\_\_

### CAB GRILLE

All cab exterior grilles shall be bright finished stainless steel. 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 bright polished stainless steel grille.

One (1)  
40-G0-11

### **CAB GROUND LIGHTS**

Y\_\_N\_\_

### CAB GROUND LIGHTING

One 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 automatically activate when any cab door is opened.

One (1)  
40-H0-10

### **ELECTRONIC BACK-UP ALARM**

Y\_\_N\_\_

### BACK-UP ALARM

An electronic Backup Alarm shall be installed on the rear of the apparatus and wired to the back-up light circuit. Minimum decibel rating of 97 dba is required.

# Portage

## Bidder Complies

One (1)  
40-H0-15

### LANYARD CONTROL FOR AIR HORNS

Y\_\_N\_\_

#### AIR HORN LANYARD

The air horns shall be controlled by a "Y-chain" lanyard mounted from the overhead console to the cab center.

One (1)  
40-H0-17

### ELECTRIC HORN/AIR HORN SELECTOR SWITCH

Y\_\_N\_\_

#### ELECTRIC HORN/AIR HORN SELECTOR SWITCH

An overhead panel mounted switch shall be supplied to control air or electric horn from the steering wheel horn button shall be provided and clearly labeled with a back-lit legend.

One (1)  
40-H0-18

### SIREN/AIR HORN SELECTOR SWITCH

Y\_\_N\_\_

#### HORN / SIREN SELECTOR SWITCH

An overhead console mounted switch to control air horn or siren from the floor mounted foot switch(es) shall be provided. This switch shall be clearly labeled with a back-lit legend.

One (1)  
40-H0-56

### ^EQ2B SIREN MOUNTED RECESSED IN THE GRILLE

Y\_\_N\_\_

#### ELECTRONIC SIREN

A FEDERAL EQ2B siren shall be mounted recessed in the grille. Includes overhead console mounted brake switch. The control of the EQ2B shall be thru the master switch.

One (1)  
40-HA-07

### DUAL GROVER AIR HORNS RECESSED 28.5"

Y\_\_N\_\_

#### AIR HORNS

Dual Grover Stuttertone air horns shall be recessed into the front bumper, (1) each side, inboard of the frame rails located 28.5" apart. The air horns shall be mounted with the Grover supplied mounting brackets.

One (1)  
40-HA-11

### DRIVERS SIDE FOOT SWITCH FOR SIREN

Y\_\_N\_\_

#### FLOOR SWITCH

One (1) foot switch for siren shall be provided on drivers cab floor. This foot switch shall be wired to control the apparatus siren.

One (1)  
40-HA-14

### OFFICER SIDE DASH SWITCH FOR SIREN

Y\_\_N\_\_

#### PUSH BUTTON SWITCH

One (1) dash mounted push button switch for the siren shall be provided on Officer's side. This push button switch shall be wired to control the apparatus siren.

# Portage

## Bidder Complies

One (1)  
40-J0-12

**HEATED WEST COAST MIRRORS**

Y\_\_N\_\_

MIRRORS

Heated 16-1/2"x 7.0" Stainless steel West Coast Mirrors with 5.5" x 8.5" rectangular convex mirrors heads shall be provided, mounted on retractable spring loaded arms.

One (1)  
40-K0-11

**SLIDING SIDE WINDOWS (2) FOR MFD/LFD**

Y\_\_N\_\_

CAB SIDE WINDOWS

Sliding side windows, (2) for standard tilt cab shall be provided in lieu of fixed windows. Window area shall be 26 1/2" high X 16" wide. All glass shall be tinted. The window frame shall be finished in a matte black color.

One (1)  
40-K0-30

**GRAY-LITE WINDOW TINT**

Y\_\_N\_\_

WINDOW TINTING

The window 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.

One (1)  
40-LC-11

**RED FLASHING OPEN COMPARTMENT LIGHT**

Y\_\_N\_\_

COMPARTMENT OPEN LIGHT

A Red Open Compartment Flashing Light, WELDON 1-2030-7120, shall be mounted on the face of the overhead panel.

This compartment open door light is wired with a flasher to the power panel for bodybuilder 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.

One (1)  
40-LD-10

**STANDARD INTERIOR LIGHTING GROUP**

Y\_\_N\_\_

INTERIOR CAB LIGHTING

Four (4) step well lights shall be supplied. These lights, one in each step well, shall have a light hood to direct the light downward toward the step and ground. All step well lights shall be illuminated when any door is opened and the battery selector switch is on.

Two (2) seven inch clear dome lights shall be supplied. One light shall be installed in the front of the cab centered over the "Widemouth 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.

One (1)

**THREE (3) ADDITIONAL 7" RED DOME LIGHTS**

Y\_\_N\_\_

# Portage

## Bidder Complies

40-LD-23

### ADDITIONAL DOME LIGHTS

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

One (1)  
40-LE-10

### ENGINE MAINTENANCE LIGHTS

Y\_\_N\_\_

### UNDER CAB ENGINE MAINTENANCE LIGHTS

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

One (1)  
40-LF-01

### FRONT WARNING LIGHT PACKAGE

Y\_\_N\_\_

One (1)  
40-LF-03

### LED CAB FRONT FACE MOUNTED CLEARANCE LIGHTS

Y\_\_N\_\_

### ICC MARKER LIGHTS

Five (5) LED cab face mounted clearance lights shall be supplied, mounted above the windshield, in conformance with FMVSS 108.

One (1)  
40-LF-25

### 80% HEAD LAMPS "ON" IGNITION CONTROL

Y\_\_N\_\_

### HEAD LAMPS "ON" IGNITION CONTROL

When the ignition switch is in "on" the head lamps shall be illuminated to 80% brilliance.

One (1)  
40-LF-41

### POWER ARC 210 FRONT WARNING LIGHTS

Y\_\_N\_\_

### ICC MARKER LIGHTS

Two (2) side combination clearance / turn signal lights shall be supplied, one (1) each side mounted ahead of the front door.

### HEADLIGHTS

Four (4) rectangular halogen headlights shall be supplied mounted in a chrome plated bezel. These headlights shall be mounted in the lower position on the front of the cab.

### TURN SIGNALS

Two (2) amber CODE 3 41TA turn arrow signal lamps shall be mounted above the red warning lights.

### WARNING LIGHTS

Two (2) POWER ARC 210 series warning lights shall be supplied mounted above the headlights in a chrome plated trim ring.

# Portage

## Bidder Complies

### CAB FRONT WARNING LIGHT CONTROL

Control of the Power Arc warning lights shall be by the Emergency Warning Light Switch for both "Calling of Right of Way" and "Blocking Right of Way" modes.

One (1)  
40-LH-20

### HIGH BEAM "WIG-WAG" WARNING FLASHER

Y\_\_N\_\_

### HIGH BEAM HEADLIGHT WIG-WAG FLASHER

A high beam headlight flasher shall be wired into the headlight system and shall include an override system if the high beam headlights are required.

One (1)  
40-LI-99

### NO INTERSECTION LIGHTS

Y\_\_N\_\_

One (1)  
40-LM-11

### FEDERAL SIGNAL LF12ER MAPLIGHT

Y\_\_N\_\_

### OFFICER MAPLIGHT

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

One (1)  
40-LS-22

### COLLINS DYNAMICS 1,250,000 CANDLEPOWER

Y\_\_N\_\_

### HANDHELD SPOTLIGHT

A COLLINS DYNAMICS MAGNUM 1,250,000 candlepower hand held spotlight shall be hard wired into cab electrical system and mounted on top of the front door of the engine doghouse. This spotlight shall include a momentary switch, with a 9 foot 16 gauge Neoprene rubber coiled cord.

A DMB-CL Heavy duty black plastic coated steel wire basket for mounting the light shall be provided.

One (1)  
40-LW-99

### NO LIGHT BAR

Y\_\_N\_\_

One (1)  
40-N0-05

### ALUMINUM DIAMOND PLATE EXTERIOR REAR WALL

Y\_\_N\_\_

### EXTERIOR WALL DIAMOND PLATE

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

One (1)  
40-P0-02

### CAB TILT/ELECT CAB LIFT PUMP W/MANUAL BACK UP

Y\_\_N\_\_

### CAB TILT SYSTEM

# Portage

## Bidder Complies

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. Each pivot pin shall have a grease fitting to allow for lubrication to the pivot area.

The rear cab lock shall be centerpoint 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. 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.

A manual backup shall be provided for use in the event of electrical failure.

One (1)  
40-Q0-02

### **ACRYLIC URETHANE 7 YEAR PAINT WARRANTY**

Y\_\_N\_\_

#### ACRYLIC URETHANE FINISHES

The manufacturer shall warrant the Acrylic Urethane finishes on a fire and emergency vehicle for a period of seven years from its date of delivery.

This warranty shall apply only to the finished areas for the following defects:

- A. Cracking or Checking.
- B. A total loss of gloss caused by chalking or fading.
- C. Peeling of the top coat or all layers included in the process from the substrate.
- D. Spot or, random discoloration in the overall finish.

# Portage

## Bidder Complies

This warranty does not apply to:

- A. Corrosion originating from within the apparatus.
- B. Hazing of the paint caused by improper abrasive detergents, or by incidental chemical exposure.
- C. Scratches, abrasions, or stone chips caused intentionally or accidentally.
- D. Homogenous darkening of the finished color.
- E. Blemishes or blistering caused by corrosion originating from within the apparatus.
- F. Blistering or peeling of lettering, and stripping.
- G. Multistage fluorescent finishes.
- H. Accidents.

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.

One (1)  
40-Q0-10

### **BLACK GLOSS ENAMEL PAINTED FRAME**

Y\_\_N\_\_

#### CHASSIS PAINT

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

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

One (1)  
40-Q0-12

### **BLACK INTERIOR PAINT & VINYL**

Y\_\_N\_\_

#### INTERIOR FINISH

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 shall be sanded to a smooth finish ready for final color coat application.

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

The following interior components shall be in covered in black vinyl to match the interior paint color:

- All seating

# Portage

## Bidder Complies

- Headliner
- Rear wall padding
- Door panels-ABS
- Doghouse covering
- Floor covering (mats)

One (1)  
40-Q0-16

### TWO-TONE COLOR CAB EXTERIOR PAINT

Y\_\_N\_\_

#### CAB EXTERIOR FINISH

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

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

#### PREPARATION

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

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

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

The body fillers shall be thoroughly mixed in accordance with the 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 pre-treat/primer one product application shall not be allowed as a substitute.

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



# Portage

## Bidder Complies

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 one of one or two applications of acrylic urethane color coat. The final finish shall be free of dirt and sags and shall meet a minimum grade of 5 when compared to the "ACT" general orange peel standards by "ACT" Laboratories, Inc. Of Hillsdale, MI.

One (1)  
40-Q0-18

**EXTERIOR PAINT OTHER THAN DUPONT**

Y\_\_N\_\_

EXTERIOR PAINT OTHER THAN DUPONT

The exterior of the cab shall be painted with paint other than Dupont:

One (1)  
40-R0-12

**MAP BOX**

Y\_\_N\_\_

MAP BOX

A map box with the bins open from the top, shall be installed on the engine doghouse, as far back as possible facing the officer. The map box shall be divided into 3 bins, **inside** dimensions being 12-3/4" long x 4-1/2" wide x 8" deep. The map box shall be constructed of .125 aluminum and shall be painted to match the cab interior. The installation of the map box shall not obstruct the driver's side view of the right side mirror.

One (1)  
40-R0-20

**ACOUSTICAL FLOOR MATTING**

Y\_\_N\_\_

FLOOR COVERING

# Portage

Bidder Complies

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

One (1)  
40-SA-01

**SEAT BELT WARNING SIGNS**

Y\_\_N\_\_

SEAT BELT WARNING LABELS

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

One (1)  
40-SI-00

**SEATS, INC. 911 LOWBACK AIR DRIVER'S SEAT**

Y\_\_N\_\_

DRIVER'S SEAT

The driver's seat shall be a Seats, Inc. 911 air ride driver's seat. The seat shall be of the low-back style. The seat shall have adjustments for height and ride adjustment. The fore / aft adjustment of the seat shall be six (6) inches and contain a fore / aft shock absorber. The bottom seat cushion shall contain a contoured thigh support. The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SI-14

**SEATS, INC. LOWBACK NON SUSPENSION OFFICER'S**

Y\_\_N\_\_

OFFICER'S SEAT

A SEATS, INC., 911 non-suspension fixed officer's seat shall be supplied. This seat is to be of the low-back style. The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SN-08

**SEATS, INC TWO OUTBOARD REAR FACING SCBA**

Y\_\_N\_\_

OUTBOARD REAR FACING SCBA CANOPY SEATS

The two (2) rear facing canopy seats shall be SEATS, INC. 911 Series Self-Contained Breathing Apparatus (SCBA) type seats. These seats shall have split head rest.

The seat covering shall be heavy duty vinyl upholstery.

One (1)  
40-SX-90

**SEAT BELTS FOR CAB**

Y\_\_N\_\_

SHOULDER HARNESS

Shoulder harness seatbelts for Driver/Officer positions shall be provided.

All rear facing seating positions shall be provided with lap type, metal to metal quick release seat belts, with automatic seat belt retraction.

The forward facing crew area seats shall be provided with shoulder harness seatbelts.

The seat belts shall be black in color.

# Portage

## Bidder Complies

Two (2)  
40-SX-92

### 3-POINT SEATBELTS PAIR FOR REAR FACING SEATS

Y\_\_N\_\_

#### SHOULDER HARNESS

Two (2) shoulder harness seatbelts shall be supplied for the rear facing seats in the crew area. The shoulder harnesses shall be black in color.

Two (2)  
40-U0-20

### TWO (2) 6" WINDSHIELD DEFROSTER FANS MOUNTED

Y\_\_N\_\_

#### DEFROSTER FANS

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

One (1)  
40-UA-40

### 40,000 BTU AIR CONDITIONING W/HEATER

Y\_\_N\_\_

#### 40,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 40,000 BTU air conditioning evaporator with a 36,000 BTU auxiliary heater.

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 air conditioning condenser mounted in a concealed location ahead of the radiator. 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 air conditioning evaporator shall be centrally mounted on the rear of the engine enclosure in the cab. 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 onoff switch, thermostat control, and blower switches shall be located on the evaporator unit.

The air conditioning system shall use R134A freon.

#### 36,000 BTU AUXILIARY HEATER

A 36,000 BTU auxiliary heater is also to 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 INSULATION

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

# Portage

## Bidder Complies

material shall be compliant with FMVSS-302.

One (1)  
40-V0-01

### **DRIVER INSTRUMENTATION AND CONTROLS**

Y\_\_N\_\_

#### DRIVER INSTRUMENTATION AND CONTROLS

The cab dash panel shall have black textured anti-glare surface. This panel shall have a wrap around feature for easy viewing of the instrumentation. The dash panel shall be a three piece design. Each panel shall be removable for access to the gauges and wiring. The instrument panel shall include the following gauges and indicators.

Electronic tachometer

Electronic speedometer with **trip odometer**

Engine coolant temperature gauge, with high temperature warning light and buzzer

Engine oil pressure gauge, with warning light and buzzer

Transmission fluid temperature gauge, with high temperature warning light and buzzer

Dual needle air pressure gauge with low air pressure warning light and buzzer

Voltmeter

Fuel level gauge

Engine hourmeter

Air cleaner restriction indicator light

High beam indicator light

Parking brake set light

Turn signal indicator lights

"Cab Door Open" indicator light

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

# Portage

## Bidder Complies

control panel shall include the following:

Keyless ignition switch with a green pilot light

Parking brake control valve

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 can be utilized for the pump shift controls.

One (1)  
40-V0-23

### **LOW COOLANT LIGHT & ALARM**

Y\_\_N\_\_

#### LOW COOLANT ALARM

A low coolant light & alarm shall be furnished. A test button is not available.

One (1)  
40-V0-25

### **TRANSMISSION TEMPERATURE LIGHT & BUZZER**

Y\_\_N\_\_

#### TRANSMISSION OVERHEAT WARNING LIGHT

A Transmission temperature light & buzzer shall be provided on the dash panel.

One (1)  
40-V0-42

### **DEACTIVATE ODOMETER WHILE IN PUMPING MODE**

Y\_\_N\_\_

#### SPEEDOMETER DEACTIVATED IN PUMP MODE

The speedometer shall deactivate the odometer while in pumping mode.

One (1)  
40-V0-50

### **LOW VOLTAGE ALARM & LIGHT**

Y\_\_N\_\_

#### LOW VOLTAGE WARNING

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

One (1)  
40-X0-16

### **DOGHOUSE SWITCH PANEL 13 INDIVIDUAL 1 MASTER**

Y\_\_N\_\_

#### DOGHOUSE MOUNTED CENTER SWITCH PANEL

The apparatus warning light panel shall be mounted on the engine doghouse between the driver and the officer. The panel shall have a black anti-glare surface, and be angled for easy viewing of the driver. The panel shall include the following switches:

One (1) lighted master control switch to allow for preselection of the other switches.

Thirteen (13) lighted individual lighting control and chassis option switches.

Each switch shall have back-lit legends with a 100,000 hour lamp for illumination.

The master lighting control switch shall be wired to three (3) 30 amp circuit breakers and three (3) 40 amp relays. Three (3) 10 gauge wires are powered by this circuit and run to

# Portage

## Bidder Complies

the roof for lightbar power. The remaining switches shall be wired to 20 amp circuit breakers and relays.

One (1)  
40-X0-26

### **CLASS ONE - TOTAL SYSTEM MANAGER**

Y\_\_N\_\_

#### TOTAL SYSTEM MANAGER

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have outputs to supply warning and load switching requirements.

Outputs 1-12 shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or warning master switch, or to sequence and shed along with the priority.

Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts.

The TSM shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

One (1)  
40-X0-32

### **ONE INTERMITTENT WINDSHIELD WIPER SWITCH**

Y\_\_N\_\_

#### INTERMITTENT WIPER CONTROL

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

One (1)  
40-X0-39

### **RADIO POWER CIRCUIT**

Y\_\_N\_\_

#### RADIO POWER CIRCUIT

A switch shall be wired into the main switch panel for use as a main power switch to activate the radio. This circuit shall include a 5 amp battery powered unswitched, a 30 amp battery powered switch with 10 gauge wire and a 10 gauge ground.

One (1)  
40-Z0-20

### **FIRE EXTINGUISHER AND HAZARD TRIANGLE KIT**

Y\_\_N\_\_

#### ROAD SAFETY KIT

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

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

One (1)  
40-Z0-31

### **AM/FM STEREO CASSETTE RADIO W/FOUR SPEAKERS**

Y\_\_N\_\_

#### PUBLIC BROADCAST RADIO

The cab shall be equipped with an AM/FM Cassette Stereo Radio with four (4) speakers.

# Portage

## Bidder Complies

One (1)  
45-A0-01

### EMI/RFI PROTECTION

Y\_\_N\_\_

#### EMI/RFI PROTECTION

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

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

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

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

One (1)  
45-D0-10

### 290 AMP NIEHOFF ALTERNATOR

Y\_\_N\_\_

#### ALTERNATOR

A 290 Amp NIEHOFF alternator shall be installed on the engine. The alternator shall be externally regulated.

One (1)  
45-NS-01

### APPARATUS BASE ELECTRICAL SYSTEM

Y\_\_N\_\_

#### CHASSIS ELECTRICAL SYSTEM

The apparatus "Electrical Distribution System" (EDS) shall be mounted inside the cab to prevent moisture from entering the area. It shall be mounted under the dash on the officer's side behind a diamond plate cover.

The EDS shall be fed by one power stud:

One (1) battery positive

The battery positive stud is to be controlled by the master disconnect switch mounted on the lower right dash panel. A green light shall indicate when the ignition circuit(s) are energized.

#### EDS MODULE

The EDS system shall be designed with locally available **plug-in** circuit breakers and **plug-in** relays. Each component position shall be labeled to indicate it's function. All electrical connections shall be insulated and secured behind the panel face to eliminate the chance of accidental electrical shorts while performing electrical system service.

# Portage

Bidder Complies

The EDS shall control a minimum of thirteen (13) low voltage, analog switched, high amperage electrical loads.

Provision for a minimum of thirty-one (31) automatic reset circuit breakers is required to protect the vital circuits of the apparatus.

The EDS system shall be removable with only four (4) fasteners for major electrical service or modifications.

The EDS panel shall have one (1) lamp for illumination of the panel during service.

## CHASSIS COLOR CODED WIRING

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

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

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

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

## ELECTRICAL SYSTEM CONNECTORS

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

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

One (1)  
45-NU-06

## **SINGLE BATTERY SYSTEM - 6 GROUP 31**

Y\_\_N\_\_

### BATTERY BANK

A single battery system shall be provided, utilizing six (6) 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, 1996 edition S9-4.2).

A battery disconnect switch (Rated at not less than 250 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the battery bank is activated.

### BATTERY CABLES



# Portage

## Bidder Complies

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

### STARTING CIRCUIT

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

One (1)  
45-TS-11

### **BATTERY CHARGER - PUMP PLUS**

Y\_\_N\_\_

### BATTERY CHARGER

The KUSSMAUL BATTERY CHARGER shall be permanently wired to the chassis batteries to provide battery charging and operation of the on board air compressor.

One (1)  
45-Z0-11

### **KUSSMAUL 120 VAC RECEPTACLE**

Y\_\_N\_\_

### 120 VAC RECEPTACLE

A KUSSMAUL 120 VAC electrical receptacle connection shall be installed beneath the driver's seat next to the battery electrical disconnect switch.

One (1)  
50-W0-50

### **TEN YEAR CAB STRUCTURAL WARRANTY**

Y\_\_N\_\_

### 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:

# Portage

## Bidder Complies

- 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)

One (1)  
61-C0-02

**OPERATOR'S MANUAL W/PARTS LIST-TWO SETS**

Y\_\_N\_\_

OPERATOR'S MANUAL

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

An electronic Electrical System Manual shall be provided.

# Portage

## Bidder Complies

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

An electronic Air System Manual shall be provided.

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

One (1)  
65-40-15

### **RADIO ANTENNA WIRING**

Y\_\_N\_\_

### RADIO ANTENNA WIRING

One Motorola quarter wave antenna roof mount (does not include mast) shall be mounted behind the light bar. The coax is to be routed in the cab to the officer's seat box.

One (1)  
75-50-11

### **AERIAL INTERFACE**

Y\_\_N\_\_

There shall be a Aerial Electrical interface for the manufacturer added.

One (1)  
90-40-xa

### **6 ADDITIONAL SWITCHES**

Y\_\_N\_\_

There shall be (6) six additional switches in a switch panel.

11/22/00

Portage Fire Dept.

MIDSHIP MOUNT FIRE PUMP

The fire pump shall be a Waterous CSUY 2000 GPM midship mount pump.

The pump shall be a single stage centrifugal class "A" rated fire pump, designed specifically for the fire service.

The fire pump shall be tested and certified by Underwriters Laboratories to perform as listed below:

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

The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus" of the National Fire Protection Association Pamphlet 1901, latest revision.

The pump shall be free from objectionable pulsation under all normal operating conditions.

IMPELLERS

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

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

FLAME PLATED IMPELLER HUBS

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

MECHANICAL SEALS

The pump shall be equipped with self-adjusting, maintenance free mechanical shaft seals that shall not require manual adjustment. These seals shall be designed in a manner that they will remain functional enough to permit continued use of the pump in the unlikely event of a

seal failure.

#### IMPELLER WEAR RINGS

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

#### PUMP CASING

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

#### PUMP TRANSMISSION

The pump transmission shall be of the latest design, incorporating a high strength involute tooth-form Morse Hy-Vo chain capable of operating at high speeds while providing smooth and quiet transmission of power. Drive and driven sprockets shall be made of alloy steel with teeth of an involute form. Drive line shafts shall be made from alloy steel forgings, hardened and ground to size. Deep groove, anti-friction ball bearings shall be used throughout the pump transmission. The pump shift engagement shall be accomplished by a free sliding collar that uses an internal locking mechanism to insure that the collar will stay in road or pump position.

Primary lubrication for the pump transmission bearings, sprockets and chain shall be provided by a splash system. A supplementary pressure system shall also be employed which shall include a strainer, an oil circulation pump driven by the impeller shaft, and a spray bar inside the case to apply oil to the inside of the chain just before it engages the driven sprocket.

The pump and transmission shall be easily separable. A two piece shaft shall be splined allowing for individual repair of either the pump or transmission, to keep down time to a minimum.

All drive line components shall have a torque rating equal to or greater than the net engine torque multiplied by the torque converter ratio and the first gear ratio.

#### AIR OPERATED PUMP SHIFT

The pump shift actuating mechanism shall be air operated from a valve in the cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate.

A manual override system shall be supplied for the pump shift should a problem develop in the chassis air brake system. Controls for the override shall be located at the lower right hand corner of the pump panel. Full instructions shall be inscribed on a plate near the pump shift controls.

#### PUMP SHIFT INDICATING LIGHTS

There shall be two (2) green pump system shift indicator lights in the chassis cab. The first light shall become energized when the pump has completed it's shift into pump gear and shall be labeled "Pump Engaged". The second light shall become energized when the chassis parking brake has been set, and when the pump and the chassis transmissions have been shifted completely into the correct gears for pumping, this light shall be labeled "OK to Pump".

There shall be one (1) green pump system shift indicator light located on the operator's panel. This light shall only become engaged when the chassis parking brake has been set, and when the pump and the chassis transmissions have been completely shifted into the correct gears. The light shall be located adjacent to the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light Is On".

#### PRIMING PUMP

The priming pump, priming valve and piping assembly shall be included in the pump assembly. The priming pump shall be an electrically driven rotary vane pump mounted firmly within the pump area. When the priming pump is in use, it shall be automatically lubricated internally from the primer oil tank with oil that is environmentally safe. The pump shall be controlled by a lever on the pump operator's panel. An indicator light on the pump panel shall show when the primer motor is engaged. The pump shall be capable of creating suction and discharging water from a lift of 10 feet through 20 feet of suction hose of the appropriate size, in not more than 30 seconds starting with the pump dry. It shall be capable of developing a vacuum of 22 inches at an altitude of up to 1000 feet.

#### DISCHARGE RELIEF VALVE

The discharge relief valve system shall be positive and quick acting, with have instantaneous hydraulic lock-out that does not require the operator to cancel out or disturb the pressure setting. With the pump operating from draft and delivering its rated capacity at 150 psi, if lines are shut down, the increase in discharge pressure shall not exceed 20 psi. The relief valve control (Pilot Valve) shall be protected from malfunction due to sand or other sediment in the water by a strainer which may be removed, cleaned and replaced from the operator's panel while the pump is operating and without shutting down the continuous flow of water.

Relief valve indicator lights shall be mounted on the panel adjacent to the pilot valve assembly. The indicator lights shall be Amber, marked Open to indicate the relief valve is bypassing and Green, marked Closed to indicate the relief valve is fully closed.

#### HEAT EXCHANGER

The chassis engine shall have a supplementary cooling system that uses water from the discharge side of the pump to cool the engine coolant through the use of a closed heat exchanger. The water from the pump and the engine coolant shall not be intermixed. This cooling system shall be

controlled by a valve on the pump operator's station.

#### PUMP COOLER

There shall be one 3/8" pump cooling/recirculating line from the pump tank fill line which is connected directly into the booster tank with a quarter-turn ball valve on operators panel to be labeled "PUMP COOLER ON/OFF".

#### PUMP COOLER CHECK VALVE

There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

#### PUMP COMPARTMENT HEAT PAN

There shall be a heat pan with a slide-in bottom panel installed beneath the pump compartment to contain the engine heat and prevent freezing of valves and plumbing in cold weather. The lower portion of the pump compartment area shall be enclosed on all sides, front, and rear. The slide-in panel shall be easily removeable for warm weather operations.

#### PUMP LUBRICATION

Grease zerks shall be installed in a convenient location and connected to the pump lubrication points by copper tubing.

#### PUMP DRAIN VALVE

A manifold drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by pulling a single control. The valve assembly shall consist of a stainless steel plunger in a bronze body with multiple ports. The drain valve control shall be mounted on the left side pump panel and identified as "Pump Drain".

#### INTAKE RELIEF VALVE

There shall be a Waterous intake relief valve system installed on the suction side of the pump. The system shall be controlled by a pilot valve adjustable from 50 to 250 PSI, and shall be designed to prevent vibration from altering the setting of the pilot valve. Provisions for servicing the strainer and needle valve shall be provided at the control panel. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

#### PUMP MANUALS

Two (2) Pump Operation & Maintenance manuals shall be supplied at the time of delivery.

#### PUMP OPERATION VIDEO

There shall be one (1) Waterous pump operation and maintenance video supplied at the time of delivery.

#### RIGHT SIDE PUMP ACCESS DOOR

There shall be a door above the right hand side panel to allow access to the pump compartment. An automatic door switch shall be installed to illuminate the pump compartment when the door is opened. The door shall also be tied into the hazard warning light in the chassis cab area. An aluminum sill protector shall be installed on the bottom opening to protect the paint against scratching and scuffing.

#### SILL PROTECTOR

There shall be one (1) aluminum scuff plate shall be installed in the lower sill area of the pump access door opening to protect the edge from paint chipping and scuffing while the pump is being serviced.

#### STEAMER SUCTION INLETS

There shall be two (2) 6" male steamer inlets. One on each side of the apparatus. The suction fittings shall include a removable die cast zinc screen to provide cathodic protection for the pump thus reducing corrosion.

#### STEAMER CAPS

Each steamer inlet, not utilizing a piston relief valve, shall have a chrome plated long handle cap with NST threads.

#### SHORT STEAMER BARRELS

To accommodate valves without exceeding the legal overall body width, shorter steamer barrels shall be installed on both sides of the apparatus.

#### ~~NOTCHED RUNNING BOARD~~

~~The right side running board shall have a cut-out notch to provide clearance for a piston relief valve.~~

#### GATED SUCTION INLETS

All suction valves shall be brass, quarter-turn, full flow, swing-out type. The valves shall be designed in such a manner that the action of water against the regulating element will not affect its position.

Each valve shall be individually attached to the manifold of the pump with galvanized pipe. The plumbing to the valve shall contain a minimum of elbows to keep friction loss to a minimum.



The valves located in the pump compartment area shall be partially recessed behind the panel with the portion of the valve that contains water protected from the elements.

#### INTAKE DRAINS

Each gated intake shall be equipped with a 3/4" quarter turn bleeder valve. The bleeder valve shall be equipped with a chrome plated bar type handle to provide a positive grip while personnel are wearing gloves.

#### INTAKE TRIMPLATES

Gated intakes shall have a polished cast aluminum trimplate around the intake valve and fitting. The trimplate shall be easily removable without the need to disturb the valve.

#### SLOW CLOSE MECHANISMS

Gated intakes that are 3" or larger with the exception of the tank to pump inlet shall be equipped with a mechanism to prevent changing the position of the valve from full open to full close, or vice-versa, in less than 3 seconds.

#### INTAKE STRAINERS

Intakes shall have a removable or accessible strainer provided inside each external intake.

#### 2-1/2" L.H. GATED INTAKE

There shall be one (1) 2-1/2" gated intake on the left side of the pump compartment with a 2-1/2" NST female chrome swivel. A 2-1/2" chrome plated plug shall be supplied and attached to the bezel by means of a chain.

#### 2-1/2" R.H. GATED INTAKE

There shall be one (1) 2-1/2" gated intake on the right side of the pump compartment with a 2-1/2" NST female chrome swivel. A 2-1/2" chrome plated plug shall be supplied and attached to the bezel by means of a chain.

#### PUMP DISCHARGES

All discharge valves shall be Akron brand, quarter-turn, full flow, swing-out type. The flow regulating element of each valve shall not change its position under any condition of operation involving discharge pressures to the maximum pressure of the pump. The means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually controlled.

#### DRAIN VALVES

Each discharge 2-1/2" or larger, with the exception of the crosslays and hard to access plumbing, shall be equipped with a Class 1, model 34BV 3/4" quarter turn drain between the valve and the discharge. A chrome plated bar type handle shall be provided on each drain valve to facilitate use with a gloved hand.

Drain valves shall be located in a row just above the running board on each side of the apparatus pump compartment to reduce clutter in the main pump panel area. Each drain valve shall be color coded to match the appropriate line it is connected to. The drain valves shall be connected to the individual valves with flexible hose that is routed in such a manner as to assure complete drainage. Discharge from the drain valves shall be routed to below the apparatus.

#### AUTOMATIC DRAINS

Crosslay and hard to access discharges shall be equipped with Class 1, model 34AD automatic drains. These drains shall open whenever the pressure in the discharge line drops below 5 PSI. The drains shall be located in areas that will allow the entire line to drain effectively. More than one drain shall be used in lines that are uneven along their length.

The outlets of the drain valves shall be extended with hoses to below the chassis frame rails.

#### DISCHARGE ELBOWS

All discharges that are 2" or larger and are 42" or more above grade shall be equipped with a downward pointing elbow of 30 degrees or more.

#### DISCHARGE CAPS

All discharges, not designated as a preconnect, shall have a chrome cap. Caps for discharges 3-1/2" and smaller shall be secured to the apparatus with suitable chains.

#### SLOW CLOSE MECHANISMS

Discharges that are 3" or larger shall be equipped with a valve mechanism to prevent changing the position of the valve from full open to full close, or vice-versa, in less than 3 seconds as required by NFPA.

#### TRIMPLATES

All discharges shall have a polished aluminum cast trimplate and an adhesive applied, color coded name tag.

#### LEFT SIDE DISCHARGES

There shall be three (3) 2-1/2" NST discharges on the left side of the pump compartment.