

Deep Creek Volunteer Fire Company  
Request for Proposals: Tanker

Notice of Request for Proposals (RFP)

Deep Creek Volunteer Fire Company (the “Company”) has been awarded an Assistance to Firefighters Grant (AFG) to purchase one (1) tanker apparatus. Per the terms of the award, the apparatus shall be new and of current design and manufacture; used or refurbished equipment is unacceptable. Proposals will only be considered from companies which have established a favorable reputation in the field of fire apparatus construction.

The company will accept sealed proposals for apparatus meeting the specifications detailed in this document from interested and qualified vendors. All price quotes must be valid for a minimum of 60 days from the date of submittal.

All proposals must be received at:

**Deep Creek Volunteer Fire Company**  
**PO Box 419**  
**McHenry, MD 21541**

All envelopes must be clearly marked:

“TANKER PROPOSAL”

All proposals must be received no later than:

**5:00 pm on October 31, 2022**

Proposals may be hand-delivered or sent via U.S. Mail or private carrier, or via email to [jking@garrettcountry.org](mailto:jking@garrettcountry.org) Oral, fax, or other forms of bid will not be accepted. All proposals become the property of Deep Creek Volunteer Fire Company and will not be returned. Mailed proposals that are delivered after the submission deadline will not be accepted regardless of the

postmarked time on the envelope. Vendors should carefully consider all delivery options and select a method that will ensure successful delivery prior to the submission deadline.

Vendors who have questions and wish to request clarification or otherwise need to contact the company regarding this specification may contact:

Jason King, Fire Chief

[jking@garrettcountry.org](mailto:jking@garrettcountry.org)

Any proposal may be withdrawn by providing written notice prior to the submittal deadline.

#### Documents Required

Vendors shall ensure all items below have been included with their proposal. Failure to provide these requirements may be cause for rejection of the bid.

Proposals must contain the following:

1. A detailed specification for the apparatus and any ancillary equipment provided, including itemized quantities and per unit costs, and detailed descriptions/prices of available options.
2. A list of any exceptions to the specifications listed in this document. For each exception, the bidder must explain the details of the exception and offer, if available, an alternative feature.
3. A drawing of the proposed apparatus, including the following:
  - a. five views (front, rear, left side, right side, top)
  - b. indications of overall length, width and height and wheelbase
  - c. indications of angle of departure, shown in degrees
  - d. a representative graphic of a firefighter to provide relative information regarding overall dimensions.

4. Each proposal shall furnish satisfactory evidence of the manufacturer's ability to construct the apparatus as specified and show proof that the manufacturer is in a position to render prompt service to repair said apparatus. To this end, each bidder shall furnish the following information:
  - a. A customer listing of at least three (3) like units and the name/location of the fire company where these units are presently in service.
  - b. Documentation of the length of time the vendor has been manufacturing fire apparatus.
5. Copy of all warranties provided by the manufacturer.
6. Certificate of Insurance (COI) or affidavit indicating product liability insurance.
7. A detailed manufacturing timeline and expected date of final delivery.

### **Detailed Specification**

The following specification represents minimum requirements, and any equipment offered must meet or exceed these requirements. Vendors who are interested in proposing "equal or better than" alternate products shall include detailed information on the proposed product with their proposal. The overall safety of the fire company's firefighters, price, and the perceived efficiency of operations will weigh heavily in the final determination of the acceptability of alternate products during the review process.

Per the terms of a FY2021 Assistance to Firefighters Grant (AFG) award, Deep Creek Volunteer Fire Company intends to purchase one (1) tanker apparatus with 2,500-gallon capacity tank and a 1500 GPM pump.

### **General Requirements**

1. All aspects of the fire apparatus body are to be entirely designed, assembled, and painted by the prime vehicle manufacturer, which minimizes third party involvement on engineering, design, service, and warranty issues.

2. The apparatus shall conform to the National Fire Protection Association Standard for Automotive Fire Apparatus, number 1901 (“NFPA 1901”), in its most recent edition. The apparatus shall further conform to all Federal Motor Vehicle Safety Standards. No exceptions permitted.
3. The design of the apparatus shall be in accordance with current best engineering practices. The design and accessory installation shall permit accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks, or other elements, which might cause injury to personnel or damage to equipment.

**Chassis Specifications:**

**Vehicle Configuration**

114SD CONVENTIONAL CHASSIS	7,934	6,476
2024 MODEL YEAR SPECIFIED	480	-480
SET BACK AXLE - TRUCK		
STRAIGHT TRUCK PROVISION, NON-TOWING		
LH PRIMARY STEERING LOCATION		

**General Service**

TRUCK CONFIGURATION  
 DOMICILED, USA 50 STATES (INCLUDING CALIFORNIA AND CARB OPT-IN STATES) FIRE SERVICE  
 EMERGENCY VEHICLES BUSINESS SEGMENT  
 FIXED LOAD COMMODITY  
 TERRAIN/DUTY: 100% (ALL) OF THE TIME, IN TRANSIT, IS SPENT ON PAVED ROADS  
 MAXIMUM 8% EXPECTED GRADE

SMOOTH CONCRETE OR ASPHALT PAVEMENT MOST SEVERE IN-TRANSIT  
(BETWEEN SITES) ROAD SURFACE  
FREIGHTLINER LEVEL II WARRANTY EXPECTED FRONT AXLE(S) LOAD: 18000.0  
lbs.

EXPECTED REAR DRIVE AXLE(S) LOAD: 46000.0 lbs.

EXPECTED GROSS VEHICLE WEIGHT

CAPACITY: 64000.0 lbs.

Truck Service

FIRE TANK/PUMPER - MAIN DRIVELINE DRIVEN

SPLIT-SHAFT PTO/PUMP

Engine

DETROIT DD13 GEN 5 12.8L 525 HP @ 1625

RPM, 1900 GOV RPM, 1850 LB/FT @ 975 RPM

Electronic Parameters

62 MPH ROAD SPEED LIMIT

CRUISE CONTROL SPEED LIMIT SAME AS ROAD SPEED LIMIT

FLEET MANAGEMENT - DAILY ENGINE USAGE ENABLED

5 MINUTES IDLE SHUTDOWN WITH CLUTCH AND SERVICE BRAKE OVERRIDE

PTO MODE BRAKE OVERRIDE - SERVICE

BRAKE APPLIED OR PARK BRAKE NOT APPLIED

SOFT CRUISE CONTROL ENABLED

ENABLE DPF REGEN ZONE 1 WITH AUTO

ENGINE RPM ELEVATE FOR EXTENDED IDLE

Engine Equipment

2010 EPA/CARB/GHG21 CONFIGURATION

2008 CARB EMISSION CERTIFICATION EXEMPTED VEHICLE; NO CLEAN IDLE  
LABEL

REQUIRED

STANDARD OIL PAN

ENGINE MOUNTED OIL CHECK AND FILL

SIDE OF HOOD AIR INTAKE WITH NFPA

COMPLIANT EMBER SCREEN AND FIRE  
RETARDANT DONALDSON AIR CLEANER  
LN 12V 320 AMP 4962PGH PAD MOUNT 10

ALTERNATOR

(3) DTNA GENUINE, FLOODED STARTING, MIN  
3000CCA, 555RC, THREADED STUD BATTERIES  
BATTERY BOX FRAME MOUNTED

STANDARD BATTERY JUMPERS

SINGLE BATTERY BOX FRAME MOUNTED LH  
SIDE UNDER CAB

WIRE GROUND RETURN FOR BATTERY

CABLES WITH ADDITIONAL FRAME GROUND RETURN

NON-POLISHED BATTERY BOX COVER

POSITIVE LOAD DISCONNECT WITH 2

CAB MOUNTED CONTROL SWITCH  
MOUNTED

OUTBOARD DRIVER SEAT

BW MODEL FE-921 19.0 CFM SINGLE  
CYLINDER

AIR COMPRESSOR WITH SAFETY  
VALVE

GVG, FIRE AND EMERGENCY SERVICE  
VEHICLES ENGINE WARNING

JACOBS COMPRESSION BRAKE

RH OUTBOARD UNDER STEP MOUNTED 15 15

HORIZONTAL AFTERTREATMENT  
SYSTEM

ASSEMBLY WITH LH HORIZONTAL  
TAILPIPE

EXITING FORWARD OF REAR TIRES  
ENGINE AFTERTREATMENT DEVICE,



SILICATE FREE) EXTENDED LIFE COOLANT  
GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT  
CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES  
HDEP FIXED RATIO COOLANT PUMP AND RADIATOR DRAIN VALVE  
MITSUBISHI 12V MOD 3.175-DP60 STARTER  
WITH INTEGRATED MAGNETIC SWITCH

Transmission

ALLISON 4000 EVS AUTOMATIC TRANSMISSION 260 100 WITH PTO  
PROVISION

Transmission Equipment

ALLISON VOCATIONAL PACKAGE 198 AVAILABLE ON 3000/4000 PRODUCT  
FAMILIES WITH VOCATIONAL MODEL EVS  
ALLISON VOCATIONAL RATING FOR FIRE  
TRUCK/EMERGENCY VEHICLE APPLICATIONS AVAILABLE WITH ALL PRODUCT  
FAMILIES  
PRIMARY MODE GEARS, LOWEST GEAR 1,  
START GEAR 1, HIGHEST GEAR 6, AVAILABLE FOR 3000/4000 PRODUCT FAMILIES  
ONLY  
SECONDARY MODE GEARS, LOWEST GEAR 1,  
START GEAR 1, HIGHEST GEAR 6, AVAILABLE FOR 3000/4000 PRODUCT FAMILIES  
ONLY  
PRIMARY SHIFT SCHEDULE RECOMMENDED  
BY DTNA AND ALLISON, THIS DEFINED BY  
ENGINE AND VOCATIONAL USAGE  
SECONDARY SHIFT SCHEDULE  
RECOMMENDED BY DTNA AND ALLISON, THIS  
DEFINED BY ENGINE AND VOCATIONAL USAGE  
PRIMARY SHIFT SPEED RECOMMENDED BY  
DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE  
SECONDARY SHIFT SPEED RECOMMENDED BY  
DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE



FUEL SENSE 2.0 DISABLED - PERFORMANCE TABLE BASED  
 DRIVER SWITCH INPUT - DEFAULT - NO SWITCHES  
 DIRECTION CHANGE ENABLED WITH  
 MULTIPLEXED SERVICE BRAKES - ALLISON 5TH  
 GEN TRANSMISSIONS  
 NO AMT DEFAULT START GEAR  
 QUICKFIT BODY LIGHTING CONNECTOR UNDER CAB, WITH BLUNTCUTS  
 ELECTRONIC TRANSMISSION WIRING TO CUSTOMER INTERFACE CONNECTOR  
 MAGNETIC PLUGS, ENGINE DRAIN,  
 TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN  
 PUSH BUTTON ELECTRONIC SHIFT CONTROL, DASH MOUNTED  
 TRANSMISSION PROGNOSTICS - ENABLED  
 2013  
 WATER TO OIL TRANSMISSION COOLER, FRAME MOUNTED  
 TRANSMISSION OIL CHECK AND FILL WITH  
 ELECTRONIC OIL LEVEL CHECK  
 SYNTHETIC TRANSMISSION FLUID (TES-295  
 COMPLIANT)

Front Axle and Equipment

DETROIT DA-F-18.0-5 18,000# FL1 71.0 KPI/3.74	210
DROP SINGLE FRONT AXLE	
MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT	10
BRAKES, DOUBLE ANCHOR, FABRICATED SHOES	
FIRE AND EMERGENCY SEVERE SERVICE, NON- ASBESTOS FRONT LINING	
CAST IRON OUTBOARD FRONT BRAKE DRUMS	
FRONT OIL SEALS	
VENTED FRONT HUB CAPS WITH WINDOW, CENTER AND SIDE PLUGS - OIL	
STANDARD SPINDLE NUTS FOR ALL AXLES	40

HALDEX AUTOMATIC FRONT SLACK  
 ADJUSTERS WITH STAINLESS STEEL CLEVIS PINS  
 STANDARD KING PIN BUSHINGS  
 TRW TAS-85 POWER STEERING

POWER STEERING PUMP

4 QUART POWER STEERING RESERVOIR 5

MINERAL SAE 80/90 FRONT AXLE LUBE

Front Suspension

18,000# TAPERLEAF FRONT SUSPENSION 200

MAINTENANCE FREE RUBBER BUSHINGS -  
 FRONT SUSPENSION

FRONT SHOCK ABSORBERS

Rear Axle and Equipment

RT-46-160 46,000# R-SERIES TANDEM 420

REAR AXLE

5.38 REAR AXLE RATIO

IRON REAR AXLE CARRIER WITH  
 STANDARD

AXLE HOUSING

JACKSHAFT, TEMPORARY DRIVELINE, 40 40

FOR CUSTOMER FURNISHED FIRE  
 PUMP.

TEMPORARILY INSTALLED FOR  
 SHIPPING TO

CUSTOMER/TEM

MXL 18T MERITOR EXTENDED LUBE	-10	-10
MAIN DRIVELINE WITH HALF ROUND YOKES		
MXL 17T MERITOR EXTENDED LUBE		
INTERAXLE DRIVELINE WITH HALF ROUND YOKES		
DRIVER CONTROLLED TRACTION		30
DIFFERENTIAL - BOTH TANDEM REAR AXLES		

(1) INTERAXLE LOCK VALVE, (1) DRIVER CONTROLLED DIFFERENTIAL LOCK  
FORWARD-REAR AND REAR-REAR AXLE VALVE  
INDICATOR LIGHT FOR EACH INTERAXLE LOCKOUT SWITCH  
INDICATOR LIGHT FOR EACH DIFFERENTIAL  
LOCKOUT SWITCH, ENGAGE <5 MPH, DISENGAGE >25 MPH  
MERITOR 16.5X7 Q+ CAST SPIDER CAM REAR  
BRAKES, DOUBLE ANCHOR, FABRICATED SHOES  
FIRE AND EMERGENCY SEVERE SERVICE NON-ASBESTOS REAR BRAKE LINING  
BRAKE CAMS AND CHAMBERS ON FORWARD  
SIDE OF DRIVE AXLE(S)  
CAST IRON OUTBOARD REAR BRAKE DRUMS  
REAR OIL SEALS  
WABCO TRISTOP D LONGSTROKE 2-DRIVE AXLE SPRING PARKING CHAMBERS  
HALDEX AUTOMATIC REAR SLACK ADJUSTERS  
CURRENT AVAILABLE SYNTHETIC 75W-90 REAR AXLE LUBE  
STANDARD REAR AXLE BREATHER(S)

Rear Suspension

TUFTRAC GEN2 46,000# REAR SPRING SUSPENSION		490
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9.5 INCH NOMINAL RIDE HEIGHT (460MM GLOBAL REFERENCE HEIGHT)  
 AXLE CLAMPING GROUP  
 55 INCH AXLE SPACING  
 FORE/AFT AND TRANSVERSE CONTROL RODS  
 REAR SHOCK ABSORBERS - TWO AXLES (TANDEM) 40

Brake System

WABCO 4S/4M ABS WITH TRACTION CONTROL  
 REINFORCED NYLON, FABRIC BRAID AND WIRE BRAID CHASSIS AIR LINES  
 FIBER BRAID PARKING BRAKE HOSE STANDARD BRAKE SYSTEM VALVES  
 STANDARD AIR SYSTEM PRESSURE PROTECTION SYSTEM  
 STD U.S. FRONT BRAKE VALVE  
 RELAY VALVE WITH 5-8 PSI CRACK PRESSURE, NO REAR PROPORTIONING VALVE  
 BW AD-9 BRAKE LINE AIR DRYER WITH 20  
 HEATER  
 AIR DRYER FRAME MOUNTED  
 STEEL AIR TANKS MOUNTED AFT INSIDE  
 AND/OR BELOW FRAME JUST FORWARD OF  
 REAR SUSPENSION, NO TRIPLE OR TORPEDO  
 TANKS  
 PULL CABLE ON WET TANK, PETCOCK DRAIN  
 VALVES ON ALL OTHER AIR TANKS

Wheelbase & Frame

6300MM (248 INCH) WHEELBASE  
 1/2X3.64X11-7/8 INCH STEEL FRAME 770 120  
 (12.7MMX301.6MM/0.5X11.88 INCH) 120KSI  
 PARTIAL INNER FRAME REINFORCEMENT AT FRONT 180  
 SUSPENSION  
 3000MM (118 INCH) REAR FRAME OVERHANG -100 420

FRAME OVERHANG RANGE: 111 INCH TO 120 INCH

24 INCH INTEGRAL FRONT FRAME EXTENSION 140 -20

CALC'D BACK OF CAB TO REAR SUSP C/L (CA) :

135.24 in

CALCULATED EFFECTIVE BACK OF CAB TO REAR  
SUSPENSION C/L (CA) : 132.24 in

CALC'D FRAME LENGTH - OVERALL : 435.74 in

CALCULATED FRAME SPACE LH SIDE : 112.06 in

CALCULATED FRAME SPACE RH SIDE : 46.03 in

SQUARE END OF FRAME

FRONT CLOSING CROSSMEMBER

STANDARD WEIGHT ENGINE CROSSMEMBER

STANDARD MIDSHIP #1 CROSSMEMBER(S)

STANDARD REARMOST CROSSMEMBER

HEAVY DUTY SUSPENSION CROSSMEMBER 30

#### Chassis Equipment

14 INCH CHROMED STEEL BUMPER 15

FRONT TOW HOOKS - FRAME MOUNTED

BUMPER MOUNTING FOR SINGLE LICENSE PLATE

GRADE 8 THREADED HEX HEADED FRAME FASTENERS

EXTERIOR HARNESES WRAPPED IN

ABRASION TAPE, SECONDARY COVERING, &

CONNECTOR PROTECTION

2D DXF/PDF VEHICLE DRAWING

TANK BODY 1501 TO 3000 GALLONS

#### Fuel Tanks

50 GALLON/189 LITER SHORT RECTANGULAR -10

ALUMINUM FUEL TANK - LH

RECTANGULAR FUEL TANK(S)

PLAIN ALUMINUM/PAINTED STEEL  
 FUEL/HYDRAULIC TANK(S) WITH PAINTED BANDS  
 FUEL TANK(S) FORWARD  
 PLAIN STEP FINISH  
 FUEL TANK CAP(S)  
     DAVCO 487 FUEL/WATER SEPARATOR WITH 15

ESOC

EQUIFLO INBOARD FUEL SYSTEM

HIGH TEMPERATURE REINFORCED NYLON

FUEL LINE

FUEL COOLER 10

Tires

MICHELIN X WORKS Z 315/80R22.5 20 PLY RADIAL 100

FRONT TIRES

MICHELIN XDN2 11R22.5 14 PLY RADIAL REAR 152

TIRES

Hubs

CONMET PRESET PLUS PREMIUM IRON FRONT

HUBS

CONMET PRESET PLUS PREMIUM ALUMINUM

REAR HUBS -60

Wheels

ALCOA ULTRA ONE 89U64X 22.5X9.00 10-HUB PILOT -28

5.99 INSET ALUMINUM FRONT WHEELS

ALCOA LVL ONE 88267X 22.5X8.25 10-HUB PILOT -224

ALUMINUM DISC REAR WHEELS

POLISHED DISC SIDE FRONT WHEELS WITH DURA-BRIGHT FINISH

POLISHED OUTER (DISHED SIDE) REAR

WHEELS WITH OUTER ONLY DURA-BRIGHT FINISH

FRONT WHEEL MOUNTING NUTS  
 REAR WHEEL MOUNTING NUTS  
 NYLON WHEEL GUARDS FRONT AND REAR ALL  
 INTERFACES

Cab Exterior

162 INCH BBC HIGH-ROOF ALUMINUM 500 150

CONVENTIONAL CREW CAB

AIR CAB MOUNTING

NONREMOVABLE BUGSCREEN

MOUNTED BEHIND GRILLE

FRONT FENDERS SET-BACK AXLE

BOLT-ON MOLDED FLEXIBLE FENDER 10

EXTENSIONS

LH AND RH EXTERIOR GRAB HANDLES WITH SINGLE RUBBER INSERT

BRIGHT FINISH RADIATOR SHELL/HOOD BEZEL

STATIONARY BLACK GRILLE WITH BRIGHT ACCENTS

CHROME HOOD MOUNTED AIR INTAKE GRILLE FIBERGLASS HOOD

CAB FLOOR, TOE BOARD AND FIREWALL 5

HEAT SHIELD

FACTORY PREP DUAL 25 INCH ROUND 4

STUTTER TONE HOOD MOUNTED AIR

HORNS

SHIPPED LOOSE FOR PDI INSTALL

SINGLE ELECTRIC HORN

DUAL HORN SHIELDS

REAR LICENSE PLATE MOUNT END OF

FRAME

HALOGEN COMPOSITE HEADLAMPS

WITH BRIGHT BEZELS

LED AERODYNAMIC MARKER LIGHTS  
DAYTIME RUNNING LIGHTS TO  
ACTIVATE  
MARKER, CLEARANCE AND TAIL LIGHTS

OMIT STOP/TAIL/BACKUP LIGHTS AND -  
PROVIDE WIRING WITH SEPARATE 5  
STOP/TAIL WIRES TO 7 FEET BEYOND  
END OF FRAME  
STANDARD FRONT TURN SIGNAL LAMPS  
DUAL WEST COAST BRIGHT FINISH  
HEATED  
MIRRORS WITH LED LIGHTS AND LH  
AND RH REMOTE  
DOOR MOUNTED MIRRORS  
102 INCH EQUIPMENT WIDTH  
LH AND RH 8 INCH BRIGHT FINISH  
CONVEX  
MIRRORS MOUNTED UNDER PRIMARY  
MIRRORS  
STANDARD SIDE/REAR REFLECTORS  
RH AFTERTREATMENT SYSTEM CAB  
ACCESS  
WITH POLISHED DIAMOND PLATE  
COVER  
63X14 INCH TINTED REAR WINDOW  
TINTED DOOR GLASS LH AND RH WITH  
TINTED  
NON-OPERATING WING WINDOWS



RH AND LH ELECTRIC POWERED  
WINDOWS

4

4

1-PIECE SOLAR GREEN GLASS WINDSHIELD

2 GALLON WINDSHIELD WASHER RESERVOIR

WITHOUT FLUID LEVEL INDICATOR, FRAME MOUNTED

Cab Interior

RUGGED TRIM PACKAGE

GRAY & CARBON VINYL INTERIOR "RUGGED"

CARBON WITH PREMIUM GUNMETAL ACCENT

(RUGGED)

MOLDED PLASTIC DOOR PANEL

MOLDED PLASTIC DOOR PANEL

BLACK MATS WITH SINGLE INSULATION

(1)DASH MOUNTED 12V POWER OUTLET

(1)DASH MOUNTED DUAL 2.1 AMP USB-C CHARGER

FORWARD ROOF MOUNTED CONSOLE

LH AND RH DOOR STORAGE POCKETS

INTEGRATED INTO MOLDED DOOR PANELS DIGITAL ALARM CLOCK IN DRIVER  
DISPLAY

(2) CUP HOLDERS LH AND RH DASH

M2/SD DASH

HEATER, DEFROSTER AND AIR CONDITIONER STANDARD HVAC DUCTING

MAIN HVAC CONTROLS WITH RECIRCULATION

SWITCH

STANDARD HEATER PLUMBING

VALEO HEAVY DUTY A/C REFRIGERANT COMPRESSOR

BINARY CONTROL, R-134A

PREMIUM INSULATION

SOLID-STATE CIRCUIT PROTECTION AND FUSES

12V NEGATIVE GROUND ELECTRICAL SYSTEM

PREMIUM LED CAB LIGHTING

DOOR LOCKS AND IGNITION SWITCH KEYED

THE SAME

KEY QUANTITY OF 2

LH AND RH ELECTRIC DOOR LOCKS

SEATS INC 911 UNIVERSAL SERIES HIGH 50

BACK

AIR SUSPENSION DRIVER SEAT WITH

NFPA

1901-2009/2016 COMPLIANT SEAT

SENSOR

SEATS INC 911 UNIVERSAL SERIES SCBA40 15

NON

SUSPENSION PASSENGER SEAT WITH

UNDERSEAT STORAGE AND NFPA

1901-2009/2016 COMPLIANT SEAT

SENSOR

SEATS INC 911 UNIVERSAL SERIES SCBA60 25

NON

SUSPENSION LH, RH AND CENTER REAR

PASSENGER SEATS WITH UNDER SEAT

STORAGE AND NFPA 1901-2009/2016

COMPLIANT SEAT SENSOR

LH AND RH INTEGRAL DOOR PANEL

ARMRESTS

BLACK CORDURA PLUS CLOTH DRIVER

SEAT COVER

BLACK CORDURA PLUS CLOTH

PASSENGER SEAT COVER

BLACK CORDURA PLUS CLOTH REAR

PASSENGER SEAT COVER

NFPA 1901-2009 HIGH VISIBILITY  
ORANGE SEAT BELTS

ADJUSTABLE TILT AND TELESCOPING 10  
STEERING COLUMN

4-SPOKE 18 INCH (450MM) LEATHER WRAPPED  
STEERING WHEEL WITH CHROME SWITCH BEZELS  
DRIVER AND PASSENGER INTERIOR SUN  
VISORS

Instruments & Controls

DIGITAL PANEL LAMP DIMMER SWITCH IN DRIVER DISPLAY  
ELECTRONIC ACCELERATOR CONTROL  
NO INSTRUMENT PANEL-DRIVER  
FULLY CONFIGURABLE CENTER INSTRUMENT PANELS  
BRIGHT ARGENT FINISH GAUGE BEZELS  
LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM  
DUAL NEEDLE PRIMARY AND SECONDARY AIR PRESSURE GAUGE  
INTAKE MOUNTED AIR RESTRICTION  
INDICATOR WITHOUT GRADUATIONS  
ELECTRONIC CRUISE CONTROL WITH  
CONTROLS ON STEERING WHEEL SPOKES  
IGNITION SWITCH WITH NON REMOVABLE KEY  
PREMIUM INSTRUMENT CLUSTER WITH 5.0 INCH TFT COLOR DISPLAY  
HEAVY DUTY ONBOARD DIAGNOSTICS  
INTERFACE CONNECTOR LOCATED BELOW LH  
DASH

2 INCH ELECTRIC FUEL GAUGE  
FUEL FILTER RESTRICTION INDICATOR  
EMISSIONS LIMITED IDLE ADJUST  
QUICKFIT POWERTRAIN INTERFACE  
CONNECTOR UNDER CAB WITH BLUNTCUTS  
ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE  
DIGITAL ENGINE OIL TEMPERATURE IN DRIVER DISPLAY  
2 INCH TRANSMISSION OIL TEMPERATURE GAUGE  
ELECTRONIC OUTSIDE TEMPERATURE  
SENSOR DISPLAY IN DRIVER MESSAGE CENTER  
ENGINE AND TRIP HOUR METERS INTEGRAL  
WITHIN DRIVER DISPLAY  
NO DR ASSIST SYSTEM  
ELECTRONIC STABILITY CONTROL  
ELECTRIC ENGINE OIL PRESSURE GAUGE  
NO OVERHEAD INSTRUMENT PANEL  
NFPA VEHICLE DATA RECORDER AND SEATBELT DISPLAY  
STANDARD RADIO WIRING WITH STEERING WHEEL CONTROLS  
ELECTRONIC MPH SPEEDOMETER WITH  
SECONDARY KPH SCALE, WITHOUT  
ODOMETER  
STANDARD VEHICLE SPEED SENSOR  
ELECTRONIC 3000 RPM TACHOMETER  
DETROIT CONNECT PLATFORM HARDWARE  
3 YEARS DETROIT CONNECT BASE PACKAGE  
(FEATURES VARY BY MODEL) DETROIT CONNECT PLATFORM  
3 YEARS DETROIT CONNECT SAFETY EVENT  
VIEWER PACKAGE FOR DETROIT ASSURANCE DETROIT CONNECT PLATFORM  
TMC RP1226 ACCESSORY CONNECTOR  
LOCATED BEHIND PASSENGER SIDE REMOVEABLE DASH PANEL  
IGNITION SWITCH CONTROLLED ENGINE STOP

(2) OVERHEAD MOUNTED LANYARD

CONTROLS: (1) OFFICER AIR HORN AND (1) DRIVER AIR HORN

DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY

SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY

ROTARY HEADLAMP SWITCH, MARKER

LIGHTS/HEADLIGHTS SWITCH WITH PULL OUT FOR OPTIONAL FOG/ROAD LAMPS

ONE VALVE PARKING BRAKE SYSTEM WITH

DASH VALVE CONTROL AUTONEUTRAL AND WARNING INDICATOR

SELF CANCELING TURN SIGNAL SWITCH WITH

DIMMER, HEADLAMP FLASH, WASH/WIPE/INTERMITTENT

INTEGRAL ELECTRONIC TURN SIGNAL

FLASHER WITH 40 AMP (20 AMP PER SIDE) TRAILER LAMP CAPACITY

Design

PAINT: ONE SOLID COLOR

Color

CAB COLOR A: L0753EY RED ELITE EY

BLACK, HIGH SOLIDS POLYURETHANE CHASSIS PAINT

STANDARD E COAT/UNDERCOATING

Certification / Compliance

U.S. FMVSS CERTIFICATION, EXCEPT SALES CABS AND GLIDER KITS

Secondary Factory Options

CORPORATE PDI CENTER OPTION

INSTALLATION/MODIFICATION ONLY

JACKSHAFT ASSEMBLIES ARE FOR

TEMPORARY USE AND SHOULD ONLY BE USED

FOR SHIPPING TO THE CUSTOMER/BODY

BUILDER

TOTAL VEHICLE SUMMARY

Weight Summary

Weight

Weight

Total

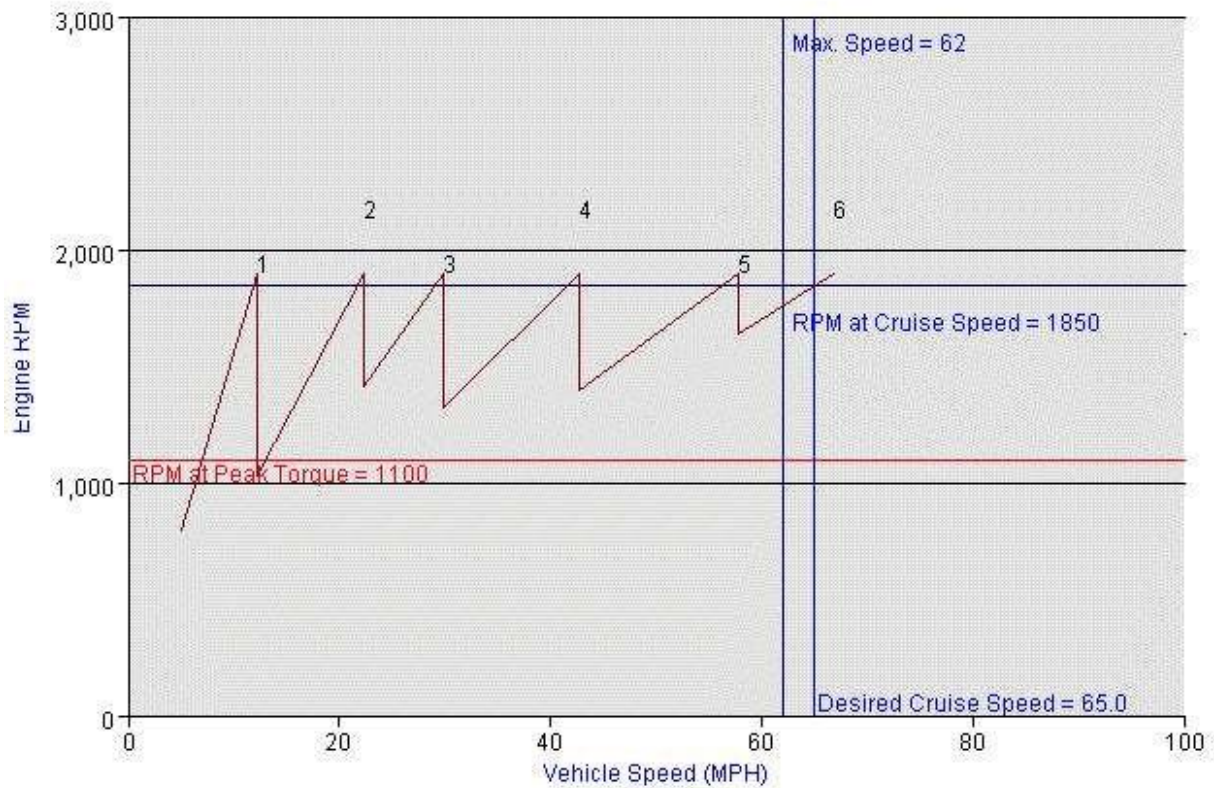
		Front	Rear	Weight
Factory Weight+	10971 lbs	7748 lbs	18719 lbs	
<hr/>				
Total Weight+	10971 lbs	7748 lbs	18719 lbs	

(+) Weights shown are estimates only.

If weight is critical, contact Customer Application Engineering.

(\*\*\*) All cost increases for major components (Engines, Transmissions, Axles, Front and Rear Tires) and government mandated requirements, tariffs, and raw material surcharges will be passed through and added to factory invoices.

## SHIFT CHART



## VEHICLE SPECIFICATIONS SUMMARY - SHIFT CHART

Model 114SD

Cab Size (829) 162 INCH BBC HIGH-ROOF ALUMINUM CONVENTIONAL CREW CAB

Desired Cruise Speed (mph) 65.0

Engine (101) DETROIT DD13 GEN 5 12.8L 525 HP @ 1625 RPM, 1900 GOV RPM, 1850 LB/FT @ 975 RPM

RPM at Peak Torque 1100 Governed RPM 1900 Transmission (342)

ALLISON 4000 EVS AUTOMATIC TRANSMISSION WITH PTO PROVISION

Gear Ratio: LL N/A Gear Ratio: L N/A Gear Ratio: 1 3.51

Gear Ratio: 2 1.91

Gear Ratio: 3 1.43 Gear Ratio: 4 1 Gear Ratio: 5 0.74

Gear Ratio: 6    0.64    Gear Ratio: 7    N/A  
 Gear Ratio: 8    N/A  
 Gear Ratio: 9    N/A    Gear Ratio: 10    N/A  
 Gear Ratio: 11    N/A  
 Gear Ratio: 12    N/A  
 Gear Ratio: 13    N/A  
 Gear Ratio: 14    N/A  
 Gear Ratio: 15    N/A  
 Gear Ratio: 16    N/A  
 Gear Ratio: 17    N/A  
 Gear Ratio: 18    N/A

Auxiliary Transmission (352)            NO AUXILIARY TRANSMISSION

Low Gear Ratio    N/A    High Gear Ratio    N/A

Transfer Case (373)    NO TRANSFER CASE

Low Gear Ratio    N/A    High Gear Ratio    N/A

Rear Axle (420)            RT-46-160 46,000# R-SERIES TANDEM REAR AXLE

Number of Speeds            1

Rear Axle Gear Ratio(s)    5.38 REAR AXLE RATIO

Rear Tires (094)            MICHELIN XDN2 11R22.5 14 PLY RADIAL REAR TIRES

Revolutions per Mile            496

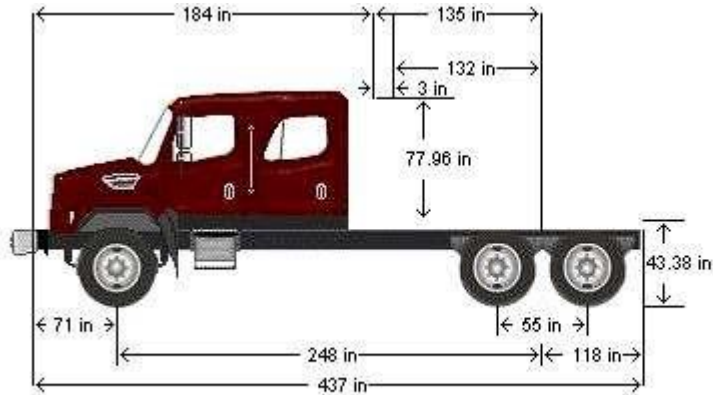
**TABLE SUMMARY - SHIFT CHART**

Transmission Gear	Transmission Gear Ratio	Rear Axle Ratio	Overall Gear Ratio	Percent Split	RPM After Shift	MPH at Peak Torque RPM	MPH at Governed
1	3.51	5.38	18.88	N/A	800	7.0	12.2
2	1.91	5.38	10.28	83.8	1034	12.9	22.4
3	1.43	5.38	7.69	33.6	1423	17.3	29.9
4	1.00	5.38	5.38	43.0	1329	24.7	42.7
5	0.74	5.38	3.98	35.1	1406	33.4	57.7
6	0.64	5.38	3.44	15.6	1643	38.6	66.8

Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering.



## DIMENSIONS



## VEHICLE SPECIFICATIONS SUMMARY - DIMENSIONS

Model	114SD
Wheelbase (545)	6300MM (248 INCH) WHEELBASE
Rear Frame Overhang (552)	3000MM (118 INCH) REAR FRAME OVERHANG
Fifth Wheel (578)	NO FIFTH WHEEL
Mounting Location (577)	NO FIFTH WHEEL LOCATION
Maximum Forward Position (in)	0
Maximum Rearward Position (in)	0
Amount of Slide Travel (in)	0
Slide Increment (in)	0
Desired Slide Position (in)	0.0
Cab Size (829)	162 INCH BBC HIGH-ROOF ALUMINUM CONVENTIONAL CREW CAB
Sleeper (682)	NO SLEEPER BOX/SLEEPERCAB
Exhaust System (016)	RH OUTBOARD UNDER STEP MOUNTED HORIZONTAL AFTERTREATMENT SYSTEM ASSEMBLY WITH LH HORIZONTAL TAILPIPE EXITING FORWARD OF REAR TIRES

## TABLE SUMMARY - DIMENSIONS

Dimensions	Inches
Bumper to Back of Cab (BBC)	184.1
Bumper to Centerline of Front Axle (BA)	71.3
Front Axle to Back of Cab (AC)	112.8
Min. Cab to Body Clearance (CB)	3.0
Back of Cab to Centerline of Rear Axle(s) (CA)	135.2
Effective Back of Cab to Centerline of Rear Axle(s) (Effective CA)	132.2
Back of Cab Protrusions (Exhaust/Intake) (CP)	2.0
Back of Cab Protrusions (Side Extenders/Trim Tab) (CP)	0.0
Back of Cab Protrusions (CNG Tank)	0.0
Back of Cab Clearance (CL)	3.0
Back of Cab to End of Frame	253.3
Cab Height (CH)	78.0
Wheelbase (WB)	248.0
Frame Overhang (OH)	118.1
Overall Frame Length	435.7
Overall Length (OAL)	437.4
Rear Axle Spacing	55.0
Unladen Frame Height at Centerline of Rear Axle	43.4

Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering.

GVWR

VEHICLE SPECIFICATIONS SUMMARY - GVWR

Model	114SD
Cab Size (829)	162 INCH BBC HIGH-ROOF ALUMINUM CONVENTIONAL CREW CAB
Expected Front Axle(s) Load (lbs)	18000.0
Expected Pusher Axle(s) Load (lbs)	0.0
Expected Rear Axle(s) Load (lbs)	46000.0
Expected Tag Axle(s) Load (lbs)	0.0
Expected GVW (lbs)	64000
Expected GCW (lbs)	0.0
Front Axle (400)	DETROIT DA-F-18.0-5 18,000# FL1 71.0 KPI/3.74 DROP SINGLE FRONT AXLE
Front Suspension (620)	18,000# TAPERLEAF FRONT SUSPENSION
Front Hubs (418)	CONMET PRESET PLUS PREMIUM IRON FRONT HUBS
Front Disc Wheels (502)	ALCOA ULTRA ONE 89U64X 22.5X9.00 10-HUB PILOT 5.99 INSET ALUMINUM FRONT WHEELS
Front Tires (093)	MICHELIN X WORKS Z 315/80R22.5 20 PLY RADIAL FRONT TIRES
Front Brakes (402)	MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES
Steering Gear (536)	TRW TAS-85 POWER STEERING
Rear Axle (420)	RT-46-160 46,000# R-SERIES TANDEM REAR AXLE
Rear Suspension (622)	TUFTRAC GEN2 46,000# REAR SPRING SUSPENSION
Rear Hubs (450)	CONMET PRESET PLUS PREMIUM ALUMINUM REAR HUBS
Rear Disc Wheels (505)	ALCOA LVL ONE 88267X 22.5X8.25 10-HUB PILOT ALUMINUM DISC REAR WHEELS
Rear Tires (094)	MICHELIN XDN2 11R22.5 14 PLY RADIAL REAR TIRES

Rear Brakes (423) MERITOR 16.5X7 Q+ CAST SPIDER CAM REAR BRAKES, DOUBLE ANCHOR, FABRICATED SHOES

Pusher / Tag Axle (443) NO PUSHER OR TAG AXLE

Pusher / Tag Suspension (626) NO PUSHER OR TAG SUSPENSION

Pusher / Tag Hubs (449) NO PUSHER OR TAG HUBS

Pusher/Tag Disc Wheels (509) NO PUSHER/TAG DISC WHEELS

Pusher / Tag Tires (095) NO PUSHER/TAG TIRES

Pusher / Tag Brakes (456) NO PUSHER/TAG BRAKES

TABLE SUMMARY - GVWR

	Front	Rear 1	Rear 2
<b>Axle Component Weight Ratings</b>			
Axles	18000	23000	23000
Suspension	18000	23000	23000
Hubs	23000	23000	23000
Brakes	20000	24999	24999
Wheels	20000	29600	29600
Tires	18180	23360	23360
Power Steering	18000	N/A	N/A
GAWR (per axle)	18000	23000	23000
GAWR (per axle system)	18000		46000
Expected Load (per axle system)	18000		46000
GVWR due to Frame	90000		
GVWR due to Transmission	300000		
<b>Vehicle GVWR Summary</b>			
Calculated GVWR	64000		
Expected GVWR	64000		
All weights displayed in pounds			

Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering.

## **Body Specifications**

### **FUEL TANK ENCLOSURE**

The fuel tank, and entrance steps will be clad with stainless steel grating trimmed with 4F finish stainless steel diamond plate. This will be done in a manner which is both safe and practical and shall add to the appearance of the apparatus. All steps shall have a positive skid resistant surface.

### **PASSENGERS TRIM**

The passenger's side entrance steps and engine after treatment components will be clad with stainless steel grating trimmed with 4F finish stainless steel diamond plate. This will be done in a manner which is both safe and practical and shall add to the appearance of the apparatus. All steps shall have a positive skid resistant surface.

### **CREW CAB ACCESS STEPS**

The driver side crew cab access steps shall be clad with stainless steel grating trimmed with stainless steel diamond plate. This will be done in a manner which is both safe and practical and shall add to the appearance of the apparatus. All steps shall have a positive skid resistant surface.

### **CREW CAB COMPARTMENT**

A stainless-steel compartment shall be installed under the passenger's side crew cab door. The compartment shall be as large as possible and include a stainless-steel flip down doors shall be with twist lock latches.

The top of the compartments shall be clad with stainless steel grating trimmed with 4F finish stainless steel diamond plate and serve as an access step to the cab. This will be done in a manner which is both safe and practical and shall add to the appearance of the apparatus. All steps shall have a positive skid resistant surface.

### **CONSOLE BETWEEN THE DRIVER AND OFFICER SEAT**

An aluminum console shall be specially designed to fit between the driver and the officer seats, to house all electrical lighting switches.

The console shall also be designed to hold the customer's specified communication equipment.  
Exact layout shall be approved by the customer, prior to construction.

#### MUDFLAPS

Heavy-duty black rubber mudflaps shall be provided behind the front tires.  
Black, anti-sail mudflaps shall be installed behind the rear wheels

#### CHASSIS MODIFICATIONS - REAR CHROME-PLATED TOW EYES

Two (2) chrome-plated tow eyes shall be installed on the rear of the apparatus. The tow eyes shall be 1-1/4" thick steel and shall be bolted directly to the chassis frame rails with grade-8 bolts. The tow eyes shall be smooth and free from sharp edges and shall have an eyelet hole of 3" diameter.

#### BUMPER APRON

An apron, constructed of #4 finish stainless steel diamond plate, shall be provided, and installed between the bumper and the front face of the cab. It shall be fastened with stainless steel bolts and shall be capable of supporting a 250-pound weight.

#### FRONT BUMPER COMPARTMENT CENTER

A compartment shall be provided in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of .125 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment will be sized to hold 150' of 1-3/4" DJ hose.

The hose shall be secured with Zico Quic-straps to prevent unintentional deployment of the hose per NFPA 15.10.5.

#### STAINLESS STEEL 2-RIB FRONT BUMPER

A 12" high, heavy-duty, 10-gauge, polished stainless steel, wraparound, 2-rib front bumper shall be provided the full width of the cab. The bumper shall be bolted directly to the chassis frame rails with stainless steel bolts.

#### AUXILIARY CAB STEPS

An auxiliary step shall be provided under each cab door. The step shall be fabricated of 1.5" stainless steel tubing with stainless grating step surface. The step surface shall meet NFPA requirements.

#### HELMET STORAGE

The helmets will be stored in a compartment as specified by the purchaser at pre-paint inspection.

#### VEHICLE DATA RECORDER AND SEAT BELT WARNING SYSTEM

The vehicle data recorder and seat belt warning system will be supplied with the chassis.

#### TIRE PRESSURE INDICATOR – NFPA 4.13.4

Reel Wheels Tire Watch stainless steel electronic LED valve caps shall be installed on all wheels. Caps shall illuminate with a red LED when tire pressure drops 8 psi. The valve caps are self-calibrating and are set to the pressure of the tire upon installation.

#### SNOW CHAINS - ONSPOT

One set of on spot six (6) strand snow chains shall be provided and installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH. Control switch shall be located in the cab.

#### IGNITION ON LIGHT

A green "MASTER DISCONNECT ON" indicator light, visible from the driver's position, shall be provided.

#### IGNITION - KEY CHAIN

The key to the chassis ignition shall be permanently chained to the dash to prevent accidental removal of the key from the cab.

## MASTER LOAD DISCONNECT SWITCH

The chassis battery system shall be equipped with a Cole-Hersee model 2484-09 master load disconnect switch, installed in the cab and accessible to the driver.

## CHROME GRILLE

Chrome trim package will be provided over the front grille.

## BATTERY CHARGER, BUILT-IN BATTERY SAVER AND BAR GRAPH DISPLAY

A Kussmaul Auto Charge #1000 Series Model #091-215-12, 15-amp battery charger and 3-amp Battery Saver shall be provided and installed. The charger shall include a Model #091-199-001 remote digital display.

The Auto Charge 1000 with Parasitic Load Compensation (PLC) is a compact, microprocessor controlled, completely automatic, single channel battery charger designed for vehicles with a single battery system. The PLC charger is designed to withstand the shock and vibration encountered by vehicle mounted equipment.

The Battery Saver component shall eliminate drain on vehicle's battery system when vehicle is not in use. The system shall automatically disconnect auxiliary vehicle loads from battery when the charger is energized.

Parasitic Load Compensation feature is designed specially to meet the heavy-duty requirements of emergency vehicles. Parasitic load compensation allows you to input the total number of parasitic load amps on the vehicle. Then the charger will shift the absorption stage set point so the battery voltage will drop to the float voltage when the desired current is reached. This will lead to a longer battery life and prevent overcharging or overheating.

It is to be powered by a 20-amp 120V inlet receptacle, with weatherproof cover and box, located on the left-hand pump panel.

## CHASSIS MODIFICATION - EXTERNAL JUMPER POSTS

One (1) set of external jumper posts shall be supplied on the unit, located near the batteries, and directly connected to the batteries.

The posts will be clearly color-identified, so there will be no confusion when connecting jumper cables or a battery charger to the posts.



## CHASSIS MODIFICATIONS-110 VOLT SHORELINE

A 110-volt shoreline shall be run to the interior of the cab for accessory electrical equipment. Line shall be wired to a six (6) outlet power strip, located in the center of the cab, where designated at the pre-paint inspection.

### PUMP - HALE QMAX XS SERIES

#### 1500 GPM SINGLE-STAGE MIDSHIP-MOUNTED CENTRIFUGAL PUMP

The pump must deliver the percentage of rated capacity at the pressure listed below:

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

#### PUMP ASSEMBLY

1. The pump shall be designed to mount on the chassis rails of commercial or custom truck chassis and have the capacity of 1,000 to 2,250 gallons per minute (U.S. GPM), NFPA-1901 rated performance.
2. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.
3. The entire pump shall be assembled at the pump manufacturer's factory, and hydrostatically tested to 600 PSI. The pump shall be tested at the pump manufacturer's factory to confirm performance specs, as outlined by the latest edition of NFPA 1901. The pump shall be free from objectionable pulsation and vibration during testing and operation.
4. The pump body and related parts shall be constructed of fine-grain alloy cast iron with a minimum tensile strength of 30,000 PSI (2,069 bar). All metal moving parts in contact with water shall be of high-quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable.

5. Pump body shall be horizontally split on a single plane, in two sections, for easy removal of entire impeller assembly, including wear rings and bearings, from beneath the pump, without disturbing piping or the mounting of the pump in chassis.

6. The pump body shall extend, as one piece, across the truck chassis from side to side, and incorporate discharge manifolding with a minimum of (12) 4" ports and (1) 3" port. Six additional/optional 3" ports are available/optional.

7. The pump shall have one double suction impeller and two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions.)

8. The pump shaft shall be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller, (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force-fed, automatic oil lubricated design; pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep-groove ball bearings in the gearbox, and they shall be splash lubricated.

9. The pump shaft shall have only one packing gland, located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland shall be a full-circle threaded design to exert uniform pressure on packing, and to prevent uneven packing loading when tightened. (No exceptions.) It shall be easily adjusted, by hand, with rod or screwdriver, without special tools or wrenches required. The packing rings shall be made

of a permanently lubricated, long-life graphic composition, and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion (No exceptions.)

10. Pump impeller shall be constructed of hard, fine-grain bronze, and accurately machined and balanced. The vanes of the impeller intake eyes shall be designed to provide ample reserve capacity, utilizing minimum horsepower.

11. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around, double-labyrinth design for maximum efficiency. (No exceptions.)

12. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished for long shaft life. Pump shaft shall be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

## GEARBOX

1. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the apparatus engine. The drive unit shall be designed with ample lubrication reserve, and to maintain proper operating temperature.
2. The gearbox driveshafts shall be of heat-treated chrome-nickel steel and at least 2-3/4 inches in diameter, on both the input and output driveshafts. They shall withstand the full torque of the engine.
3. All gears, both drive and pump, shall be made of the highest quality, electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate design for long life, smooth and quiet running, and high load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to provide maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard-anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. Three green warning lights shall be provided to indicate to the operator when the pump has completed the shift from "road" to "pump" position. Two green lights are to be located in the driver compartment and one green light on pump operator's panel adjacent to the throttle control.

## PUMP CONTROL

Provisions shall be made for placing the pump drive system in operation, using controls and switches that are identified, and within convenient reach of the operator.

A "PUMP ENGAGED" indicator shall be provided in the driving compartment and on the operator's panel to indicate that the pump shift process has been successfully completed. An "OK TO PUMP" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position. The system shall include a nameplate, indicating the chassis transmission shift selector position to be used for pumping, and located so that it can be easily read from the driver's position.

The system shall include the applicable NFPA standard interlocks, pump shift, and "OK TO PUMP" indicator lights in the cab and at the pump panel. The fire pump system shall be equipped with an interlock system to ensure that the pump drive system components are properly engaged in the pumping mode of operation, so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

#### HALE ANODE SYSTEM

Two (2) Hale anodes shall be installed in the pump to prevent damage caused by galvanic corrosion within the pump.

One (1) installed in the suction side of the pump and one (1) installed in the discharge side of the pump.

The anodes should be inspected every 12 months and replaced when over 75% of the zinc has been consumed. Performance of the anode life will vary with water quality and PH.

#### CLASS I TOTAL PRESSURE GOVERNOR (TPG)

The Total Pressure Governor (TPG) is an SAE J1939 Controller Area Network (CAN) device that controls engine speed using data communications directly to the engine ECU, or with an analog control signal. By operating on the J1939 network, the governor is able to monitor engine RPM and other pertinent data directly from the engine ECU. Engine information is available directly, so that NFPA required instrumentation is delivered through a single unit, saving panel space, and delivering engine specific warnings as determined by each engine manufacturer.

Control algorithms are optimized to take advantage of the J1939 CAN data to yield crisp and accurate control of engine - and subsequently pump - speed and pressure output. For engines that

may not support the data link control, an analog output signal is available to provide precise control of the engine speed and pressure.

The governor is capable of controlling any engine that allows J1939 PGN0 (Torque Speed Control) messages from a unique source address. These engines include various Detroit Diesel DDEC engines, Mercedes Benz (MBE) engines, Volvo, and others. Programming of the source address or other parameters on the engine ECM may be required. The Scania engine allows control by proprietary J1939 messages and is supported by the TPG. In cases where an engine does not support data link control, the TPG can be configured to control the engine with an analog signal, coupled to the engine remote PTO throttle input.

#### VPOS OIL-FREE PRIMER SYSTEM - PUSH BUTTON CONTROL

**A Waterous VPOS oil-free, rotary vane primer shall be provided.**

The primer shall be a positive-displacement pump that will meet NFPA requirements.

The valve is opened by a heavy-duty solenoid, which is energized simultaneously with the primer motor, by a push button switch, located on the operators panel, and will be clearly labeled.

#### PIPING

All piping shall be heavy-duty, 304 grade, schedule 10 stainless steel or Class 1 high-pressure flexible hose. All stainless-steel fittings shall be threaded or welded.

Class 1 flexible hose shall be Black SBR synthetic rubber hose with 300# working and 1200# burst pressure, with stainless steel fittings.

Whenever possible, sweep-type elbows shall be utilized, to reduce friction loss. Thread-in 45's and 90's will be used elsewhere.

Victaulic or rubber couplings shall be used, where necessary, to allow flexing of plumbing, which will prevent damage or loosening of the piping, which can occur with rigid plumbing.

All threaded joints shall have non-hardening type sealant for easy removal for repairs.

All piping, including intake and discharge lines, shall be hydrostatically tested. A vacuum test shall be applied to the pump, plumbing, and valves, to test for leaks. The system shall be tested and shall show minimum loss of no more than 10 inches of vacuum over a 5-minute period, as required by NFPA section 16.13.6.4.

#### SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to, such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush, and air bleeder valves.

#### FIRE PUMP & PLUMBING SYSTEM PAINTING

The fire pump and plumbing system shall be painted job color, or the lower color when a two-paint scheme is specified. No exceptions.

#### AKRON VALVES

All pump intake and discharge valves shall be AKRON 8000 heavy-duty swing-out series. The valves shall have an all-brass body with flow-optimizing stainless-steel ball, and dual-polymer seats. The valves shall be capable of dual-directional flow, while incorporating a self-locking ball feature, using an automatic friction lock design, and specially designed flow-optimizing stainless-steel ball. All stainless-steel parts must be 316 grades for increased resistance to corrosion. The valve shall not require the lubrication of seats or any other internal waterway parts and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valves shall carry a ten (10) year manufacturer's warranty. The valve shall be manufactured and assembled in the United States.

#### INTAKE RELIEF VALVE

An Elkhart Brass intake relief valve shall be installed on the suction side of the pump. The valve shall be the preset type at 125 PSI and is adjustable from 75 to 250 PSI and shall be designed to prevent vibration from altering the setting. 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 HOUSE HEATER

A Maradyne model 9000, 40,000 Btu, heater will be provided and installed in the pump compartment.

Control switch shall be located on the operator's panel.

Heater will be piped into the chassis heating system and will have an inline shut off valve.

#### U.L. PUMP & VOLTAGE CERTIFICATION TEST

One (1) certification test shall be performed at the manufacturers on-site testing facility, by Underwriters Laboratories.

The certification shall include at minimum:

- Pumping test - NFPA 16.13.2
- Pumping engine overload test – NFPA 16.13.3
- Pressure control system test - NFPA 16.13.4
- Priming system tests - NFPA 16.13.5
- Vacuum test - NFPA 16.13.6
- Water tank-to-pump flow test - NFPA 16.13.7
- If tire pump is driven by the chassis engine: engine speed advancement interlock test – NFPA 16.13.8
- Gauge and flowmeter test – NFPA 16.13.9
- Low voltage
- Line voltage

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures, together with the speed of the engine, as determined by the certification test. The plate shall be completely engraved with all information at the factory and attached to the vehicle prior

to delivery. The original U.L. certificate shall be provided upon acceptance and payment of the apparatus in full.

#### VENTED LUG CAPS AND PLUGS

All intake and discharge plugs and caps shall be vented-lug type, designed to relieve trapped pressure and help reduce possible operator injuries.

#### STEAMER INLETS

Two (2) 6" steamer inlets shall be provided on the pump panels, one (1) on the left side and one (1) on the right side.

Both inlets shall have screens and chrome caps with long handles.

#### SUCTION - LEFT SIDE

One (1) 2-1/2" suction valve shall be installed on the left side of the unit. The valve body shall be mounted behind the pump panel, with a 2-1/2" NST chrome inlet swivel, chrome plug and chain, and removable inlet strainer.

#### TANK TO PUMP

There shall be one 3" gated tank to pump line piped to the tank sump.

Piping from the sump to the valve shall be 4" diameter.

The line shall be plumbed directly into the back of the pump for maximum efficiency.

A full flow, in line ball valve, with check valve, shall be provided to prevent accidental pressurization of the water tank through the pump connection.

A manual control will be located on the operator's panel with a function plate.

#### TANK FILL - 2-1/2"

There shall be a 2-1/2" tank refill line installed, with a 2-1/2" inline valve.



Valve shall be controlled at the pump operator's panel, and will be clearly marked "TANK REFILL/PUMP COOLER".

#### CROSSLAY HOSEBEDS W/ 2" PLUMBING

Two (2) cross lays shall be installed over pump compartment.

Each section of the cross lay shall be capable of holding 200' of 1.75" double-jacketed hose in a single-stack load.

A 2" mechanical swivel with 1.5" NST hose connector shall be used in each cross lay, to allow deployment of hose in either direction.

Stainless steel rollers with nylon guides shall be mounted on both ends, and below cross lays.

A 1/4" aluminum divider shall separate the cross lays, and poly-plas matting shall be used on the stainless steel cross lay floor.

Each cross lay shall be plumbed with 2" piping and a 2" valve shall be controlled at the operator's panel.

#### CROSS LAY HOSEBED W/ 2-1/2" PLUMBING

One (1) cross lay shall be installed over the pump.

The cross lay shall be capable of holding 200' of 2.5" double-jacketed fire hose, in a single- stack load.

A 2.5" mechanical swivel hose connector shall be used in the cross lay, to allow deployment of hose in either direction.

Poly-plas matting shall be provided on the stainless steel cross lay floor.

Stainless steel rollers with nylon guides shall be mounted on both ends, and below the cross lay.

The cross lay shall be plumbed with 2.5" piping and a 2.5" valve shall be controlled at the operator's panel.

#### CROSSLAY LID

A polished aluminum diamond plate lid shall be provided over the cross lay(s).

The lid shall have full-length stainless-steel hinge with Velcro straps to hold lid firmly in place.

#### CROSSLAY VINYL FLAPS

Black vinyl flaps shall be installed on each end of the cross lay to retain the hose load. The flaps shall be secured with 2" wide straps with Velcro fasteners.

Meets NFPA 15.10.5 - Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, side, front, and rear of the hose storage area while the apparatus is underway in normal operations.

#### DUNNAGE COMPARTMENT

The remaining area behind the cross lay(s) shall be used for additional storage space.

#### DUNNAGE COMPARTMENT

Each side of the dunnage compartment shall be enclosed with 12-gauge satin-finish stainless steel.

#### FRONT BUMPER DISCHARGE

One (1) discharge shall be piped to the left front bumper with 2.50" piping and 2.50" valve.

Discharge shall terminate above the gravel shield to the left of the sump box with a Trident 2.50" Female NPT x 1.50" Male NH chrome swivel elbow.

A control handle shall be provided on the pump operator's panel.

## DISCHARGES - 2.5" LEFT SIDE

Two (2) 2.5" discharges shall be located on the left side pump panel and shall be controlled from the operator's panel.

Each discharge shall terminate with a 2.5" NST 30-degree turn-down with chrome cap and retainer chain.

## DISCHARGE - 2.5" RIGHT SIDE

One (1) 2.5" discharge shall be located on the right-side pump panel and shall be controlled from the operator's panel.

The discharge shall terminate with a 2.5" NST 30-degree turn-down with chrome cap and retainer chain.

## DISCHARGE -3" RIGHT SIDE - 4" STORZ

One (1) 3" discharge shall be located on the right-side pump panel and shall be controlled from the operator's panel.

The discharge shall terminate with a 3" NST x 4" 30-degree Storz adapter, with blind cap and retainer chain.

## PUMP MASTER DRAIN

The pump shall be equipped with a Trident master drain that will have the capacity to drain all lines and main pump at the same time. The master drain will be mounted on the left side panel and will be readily accessible.

## DRAIN VALVES

All side discharges and auxiliary suction drain valves shall be Innovative Controls 3/4" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag, also supplied by Innovative

Controls, identifying each valve. The colors labels shall also include valve open and close verbiage. The drain valves shall be located in the lower portion of the pump panels. All other discharges shall have Class 1 brand 3/4" automatic bleeder drains.

#### INDEPENDENT PUMP MODULE

The pump module shall be a self-supported structure, mounted independently from the body and chassis cab. The pump module shall be fabricated and constructed from the same material as the body. The design shall allow for normal frame deflection, without imposing stress on the pump module structure. The pump module shall consist of a welded, tubular, stainless steel framework, properly braced, to withstand chassis frame flexing. The pump module shall be bolted to the chassis frame rails.

#### SIDE MOUNTED OPERATOR'S PANEL

#### CONSTRUCTION

The pump house shall be a properly supported structure mounted between the body and chassis cab and shall be bolted to the chassis frame rails. The panel shall be supported by 1-1/2" stainless steel tubing.

The pump and all the pump mounted valves shall be completely enclosed by the pump house design.

Left and right-side pump house panels shall consist of upper and lower stainless steel removable panels.

Stainless panels to be brushed satin finish 12-gauge 304 material to ensure longevity.

The left side of the pump house shall consist of an upper hinged panel containing all required gauges.

The lower panel shall contain left side specified discharges, inlets, drains, and pump controls.

The right side of the pump house shall consist of a double vertically hinged access door. The door will be swing open style with quick opening latch.

A separate lower panel shall contain the specified right side mounted discharges and inlets and their respective drains.

The bottom panel shall be fastened to the pump house with stainless steel bolts and shall be completely removable.

#### INNOVATIVE CONTROLS PUSH/PULL VALVE CONTROL HANDLES

For valve actuation, the apparatus pump panel shall be equipped with Innovative Controls side mount valve controls.

The ergonomically designed push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and verbiage. The control rod, double laminated locking clips and rod housing shall be stainless steel and provide a true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall minimize rod deflection, never need lubrication, and ensure consistent long-term operation. Where required locking 1/4 turn push-pull T-handle controls will be provided.

The control assembly shall include a decorative chrome plated zinc panel mounting bezel and 4 mounting bolts.<sup>2</sup>

#### IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

The verbiage label bezel assemblies shall include a chrome plated panel mount bezel with durable easy to read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. The UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

## SIDE MOUNTED OPERATOR'S PANEL

The following items shall be located on the left side pump panel:

\*Individual 0-400# compound discharge gauges shall be provided for each 1.5" or larger discharge

\*One (1) -30 to 400 psi master pressure gauge

\*One (1) -30 to 400 psi master vacuum gauge

\*Two (2) UL test connections

\*One (1) master pump house lighting switch

\*One (1) pressure governor control

\*One (1) primer control

\*All discharge controls

\*One (1) tank fill/pump bypass control

\*One (1) tank to pump valve control

\*One (1) pump ENGAGED indicator light

\*One pump certification plate

\*One liquid level meter with sensor in the water tank

## RUNNING BOARDS

Running boards shall be provided on each side of the pump module, which shall extend from the front of the side compartments, forward to the back of the cab. Running boards shall be covered with 1.50" stainless steel grating. Grated area will allow debris to fall to the ground and not collect on top of the step. The outer edges will be trimmed with #4 finish stainless steel diamond plate.

Running boards are supported by 1.50" structural stainless-steel tubing, welded to the pump house framing, and shall be able to support a minimum of 500 pounds. The running board stepping surface will comply with the latest version of NFPA 1901.

#### PANEL LIGHTING

The side-mount pump panel shall be illuminated by four (4) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens.

Lights shall be mounted across the top of the gauge panel, and shall be protected by a full-width, polished stainless-steel shield.

Lights are controlled by a panel-mounted master light switch.

One (1) side pump panel light shall illuminate when the pump is shifted into gear from inside the cab, affording the operator illumination when first approaching the control panel.

#### 4.0" NOSHOK MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter NOSHOK pressure gauges. Each gauge shall have a one-piece, die-cast, brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion-free viewing, and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation, and ensure proper operation from -40°F to +160°F. Each gauge shall meet ANSI B40.1 Grade

1A requirements with an accuracy of +/- 1%, full scale, and include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished, chrome-plated, brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated mounting bezels that incorporate valve-identifying verbiage.

The master gauges shall be installed on the pump panel, no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge and shall display a range from -30 to 400 psi, with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge and shall display a range from -30 to 400 psi, with black graphics on a white background.

### 2-1/2" NOSHOK GAUGES

The valve discharge gauges shall be 2 ½" diameter NOSHOK pressure gauges. Each gauge shall have a one-piece, die-cast, brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation, and ensure proper operation from -40°F to +160°F.

Each gauge shall exceed ANSI B40.1 Grade B requirements, with an accuracy of +/- 1.5%, full scale, and shall include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished, chrome plated, brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated, mounting bezels that incorporate valve-identifying verbiage and color labels. The gauges shall display a range from 0 to 400 psi, with black graphics on a white background.

### ICI WATER LEVEL MONITOR

An Innovative Controls SL-10 Series tank level monitor system shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10' connection cable. The display module shall show the volume of water in the tank using 10 superbright, easy-to-see LEDs. Tank level indication is enhanced using green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-empty



and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant, being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome-plated, panel-mount bezel with a durable easy-to-read polycarbonate insert, featuring blue graphics and a water icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs, starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless-steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be on the pump operator's panel.

#### WHELEN TANK LEVEL LIGHTS

There shall be two (2) Whelen Strip-Light Plus XL tank lights, surface-mounted within chrome bezels. Lights will be mounted vertically, one (1) on each side of the body.

The light strips shall feature four (4) colors of LED lights, to indicate the fluid level of a tank.

The lights shall change in color to indicate the water level of the tank in ¼ tank increments. The colors shall change from green, indicating a full tank, to blue, amber, and red as the tank level drops.

#### MICROPHONE COMPARTMENT

A microphone compartment shall be installed on the pump operator's panel. The compartment shall be sized per customer specifications.

#### 2-1/2" REAR DIRECT TANK FILL

One (1) 2.5" Akron Brass style 8825 valve provided. The fill shall terminate with a 2.50" 30degree chrome elbow with chrome plug and retainer chain. A 3/4" bleeder will be installed. The valve will be installed on the rear of the tank, to the right of the rear dump valve.

#### DUMP VALVE-10" NEWTON ELECTRIC ACTIVATED

One (1) Newton model 1080-34C 10" square stainless steel dump valve shall be provided and installed, centered on the rear of the unit, in the lowest portion of the tank. The valve will be electric activated with three (3) control switches located:

- One (1) in the cab
- One (1) on the left rear of the unit
- One (1) on the right rear of the unit

#### SWIVEL ADAPTER

A Newton model 6012SW-34 Stainless steel swivel chute will be provided and attached to the rear dump valve. The adapter will swivel 180 degrees. A model 4036 stainless steel slide extension will be attached to the swivel.

#### WATER TANK

The UPF poly water tank shall be constructed of PT3™ polypropylene material. This material shall be a non-corrosive, stress-relieved thermoplastic and shall be UV-stabilized for maximum protection. The tank shell thickness may vary depending on the application and may range from ½" to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank capacity shall be 2500 gallons and will be equipped with a 6" vent/overflow.

#### TANK CONSTRUCTION

The poly water tank shall be of a specific configuration and is designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas, as required, and tested, for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology, wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier, offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with a removable lifting assembly, designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the

walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank, providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

#### CAPACITY CERTIFICATION

All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank® III is delivered with a Certificate of Capacity, delineating the weight empty and full, and the resultant capacity based on weight.

#### TANKNOLOGY™ TAG

A tag shall be installed on the apparatus, in a convenient location, which shall contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include:

- The capacity of the water and foam(s)
- The maximum fill and pressure rates
- The serial number of the tank
- The date of manufacture
- The tank manufacturer and contact information

The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

#### TANK LID

The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and shall be UV-stabilized to incorporate a multi-piece locking design which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold-downs consisting of 2" minimum polypropylene dowels, spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

#### TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter.

The fill tower shall be blue in color, indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe.

#### OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" ID schedule 40 P.V.C. combination overflow/vent pipe that is designed to run through the tank and shall be piped to discharge water behind the rear wheels, as required in NFPA 1901, to not interfere with rear tire traction.

#### TANK SUMP

There shall be one (1) sump, standard, per tank. The sump shall be constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left/front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug, per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

#### TANK OUTLETS

There will be two (2) standard tank outlets:

- One (1) for the tank-to-pump suction line, which shall be a minimum of 4" coupling and
- One (1) for a tank fill line, which shall be a minimum of a 2" N.P.T. coupling.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

#### WATER TANK MOUNTING

The tank shall rest on the body cross members, spaced a maximum of 22" apart, and shall be isolated from the cross members using 1/4" to 1/2" rubber, 2-1/2" wide. The tank shall sit, cradle-mounted, using four (4) stainless steel corner angles 3" x 3" x 1/4" thick. Angles are welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The angles are also isolated from the tank using 1/4" to 1/2" rubber. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs.

The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

#### STAINLESS STEEL BODY & COMPARTMENT CONSTRUCTION

The complete apparatus body and subframe shall be fabricated of 12-gauge, type 304 grade stainless steel sheeting with a tensile strength of 87,000 psi and a yield strength of 39,000 psi.

All body and compartment components shall be break-form design. Compartments are constructed of 12-gauge, type 304 stainless steel. This shall include compartment floors, side walls, and ceilings. No Exception. Compartments shall be formed from a single sheet of metal when possible. The exterior of the compartments shall be solid seam welded. The corner seams shall be caulked with gray silicone caulking. All burrs shall be removed to eliminate sharp edges.

Interiors of compartments are to be left natural stainless steel with a swirl finish applied to give a lasting and pleasing appearance.

#### COMPARTMENT SUPPORTS

Compartment floor supports shall be provided, fabricated of 12-gauge stainless steel. Support members measuring 2.00" x 4.00" shall be installed under the compartment floors. The supports shall be formed, U-shaped sections that will extend the full width beneath the compartment floors. The upper body walkway floor will be supported in a similar fashion.

#### STAINLESS STEEL SUBFRAME

A 1.50" x 3.00" stainless steel tubular subframe shall be fabricated to support the body and tank. Structural stainless-steel rails shall run the full length of the body, across the top of the chassis frame rails. Stainless steel crossmembers measuring 3.00" shall be utilized to ensure rigidity, with cross members being space no more than 24" apart.

The subframe and cross members shall be MIG-welded. All compartments and all stainless-steel sheeting are TIG-welded with 308 stainless steel filler wire.

The complete body structure shall be secured to the chassis frame rails with high-grade 5/8" diameter U-bolts.

Heavy duty rubber sill measuring 1.00" x 3.00" will be installed between the body subframe and chassis frame rails to prevent stress on the body and tank components. The rubber sill shall be retained by a full-length stainless-steel channel.

#### STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA 1901 anti-slip standards.

#### WHEEL WELLS

Twelve-gauge stainless steel wheel wells shall be an integral part of the body construction.

Wheel wells and cabinetry are to be designed so road debris will not be trapped on top of the cabinets.

Full, one-piece, circular, 24"-deep stainless-steel wheel well liners shall be installed. The fender flares shall be bright polished stainless steel and are attached to the wheel well using stainless steel bolts.

#### WIRING ACCESS PANELS

Wiring access panels shall be provided in the body interior corner compartments. The panels shall be bolted in place to allow easy removal for service.

#### FUEL TANK ACCESS

If the apparatus is equipped with a rear, frame-mounted fuel tank, a removable, bolt-on access panel will be provided in the rear compartment wall.

#### REMOVAL OF BODY

The completed body with all related parts will be removable in its entirety and shall accompany the water tank when removed.

## FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel.

## COMPARTMENT VENTS

Compartments shall have a minimum of two (2) 4" louvered stainless-steel vents per compartment. They shall be installed in the rear wall of each compartment in a fashion to prevent foreign matter and water from entering.

## COMPARTMENT DRAINS

Duckbill-type rubber floor drains will be installed in the corners of the lower compartment floors.

## COMPARTMENTS

L1: 62.00" High x 14.00"/28.00" Deep x 36.00" Wide      Door Opening: 58.50" High x 32.50"  
Wide

L2: 29.00" High x 14.00" Deep x 120.00" Wide - with two (2) door openings      Door  
Opening: 26.50" High x 56.00" Wide

L3: 62.00" High x 14.00"/28.00" Deep x 36.00" Wide      Door Opening: 58.50" High x 32.50"  
Wide

R1: 33.00" High x 28.00" Deep x 36.00" Wide  
Door Opening: 30.50" High x 32.50" Wide

R2: 33.00" High x 28.00" Deep x 36.00" Wide  
Door Opening: 30.50" High x 32.50" Wide

## SQUARE BACK BODY DESIGN

The rear side body compartments and the body side walls shall extend all the way to the rear of the apparatus and shall be a squared-off design.

## REAR BUMPER

The rear bumper shall be fabricated of 1.50" x 1.50" and 1.50" x 3.00" structural stainless-steel tubing. The bumper shall be fully welded design and shall be welded to the rear side body compartments.

The rear bumper shall be 16.00" deep and shall run the full width of the vehicle.

## BUMPER STEP SURFACE

The bumper step shall be constructed of 1.50" stainless steel grating. Grated area will allow debris to fall to the ground and not collect on top of the step. The outer edges will be trimmed with #4 grain-finish stainless steel tread plate. The bumper stepping surface will comply with the latest version of NFPA 1901.

## REAR BODY TRIM

The rear of the body below the rear dump valve shall be covered with #4 stainless steel tread plate.

## FRONT COMPARTMENT TRIM

Front exterior wall of the front compartments shall be covered with #4 grain finish stainless steel tread plate.

## PUMP HOUSE TRIM

The front of the pump house shall be covered with #4 grain finish stainless steel tread plate.

## STAINLESS STEEL RUB RAILS

Rub rails shall be provided and installed below each side compartment. The rub rail assembly shall be constructed of 1.00" wide x 1.50" high, heavy-duty, 14-gauge, 304-grade stainless steel tubing with black end caps and will be DA finished. Rub rails shall be bolted to the lower exterior edge of the apparatus body, with 0.50" nylon spacers installed between the body and the rub rail.

## HOSE BED

A stainless-steel hose bed with swirl finish shall be located above the water tank. The hose bed front and side walls shall be free of all sharp objects to prevent hose damage. There shall be two



removable floor sections constructed of fiberglass grating, model T-3500, 1" "T" bars with 35% open area. This will allow for proper ventilation and drainage of hose.

#### FLUSH SIDE BODY PANELS

Hose bed side walls shall extend to outside edge of the side compartments. Panel shall be constructed of 12-gauge 304 grade smooth stainless-steel sheeting and be painted job color.

#### HOSE BED DIVIDER

One (1) full-length, adjustable hose bed divider shall be located in the hose bed and shall be fully adjustable by means of stainless-steel uni-strut tracking. Tracking will be located at the front and rear of the hose bed.

The divider shall be one piece and shall be constructed of 1/4" extruded aluminum. The divider's bottom T-bar shall extend the full length of the hose bed. A smooth, 1/2" diameter top edge is provided to prevent damage to hose.

The divider shall be bolted in place with stainless steel fasteners and shall be easily adjusted from side to side with simple hand tools.

#### HOSE BED CAPACITY

The hose bed shall be capable of holding the following hose:

1000 Feet of 4.00" DJ hose

#### HOSEBED TARP

A Red vinyl hose bed cover shall be provided with Velcro and twist lock fasteners on the front, shock cords fasteners on the sides with stainless steel hooks, and rear weighted flap with straps.

#### HANDRAILS

Access handrails shall be constructed of 1-1/4" in diameter extruded aluminum tubing with ribbed rubber inserts. Access rail escutcheons and brackets shall be chrome-plated and shall be attached with stainless steel bolts. Anchoring of posts and framing members for handrails of all

types shall be capable of withstanding a load of at least 225 pounds, applied in any direction, at any point along the rail.

Handrails and handholds shall be constructed so that three points of contact (two hands and one foot, or one hand and two feet) can be always maintained while ascending and descending.

#### VERTICAL HANDRAILS

Two (2) 48" long handrails shall be mounted vertically, at the rear of the apparatus, one (1) on each side of the rear compartment.

#### HORIZONTAL HANDRAILS

One (1) 72" long handrail shall be mounted horizontally just below the hose bed.

#### FOLDING ACCESS STEPS

Four (4) Innovative Controls folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load, and traction requirements of NFPA. Each step shall be chrome-plated and shall include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring-loaded to hold the step in the upright, stowed position while in transit, and when not in use.

The step shall include a white LED step light.

Location: Rear of unit to allow easy access to the hose bed.

#### INTERMEDIATE REAR ACCESS STEP

A fixed step shall be provided on the rear body panel, above the rear dump valve.

The step shall be approximately 10" deep x 48" wide. The stepping surface shall be stainless steel grating. The bottom will be open to prevent debris from collecting. The outer edges of the step shall be covered with #8 mirror finish stainless steel diamond plate.

The step shall be supported by 1.50" structural stainless-steel tubing, welded to the rear body framing, and shall be able to support a minimum of 500 pounds. The running board stepping surface will comply with the latest version of NFPA 1901.

#### SUCTION HOSE COMPARTMENT UNDER THE TEE OF THE TANK

Compartments will be provided each side under the Tee portion of the water tank for the storage of suction hose.

#### PIKE POLE STORAGE TUBES

Two (2) stainless steel tubes shall be incorporated into the left side suction hose compartment designed store the pike poles specified.

#### ATTIC LADDER STORAGE

A stainless-steel divider shall be incorporated into the right-side suction hose compartment designed to store the attic ladder specified.

#### COMPARTMENT DOORS

Rear, vertically hinged, painted, stainless steel doors with Southco #E3-11-012 all-stainless-steel twist-lock latches will be provided for loading and unloading the equipment. Door(s) shall be wired to the door-ajar circuit.

#### PORTABLE TANK

A compartment will be located on right side of the booster tank under the hose bed.

Compartment shall be fabricated of 1/2" polypropylene and shall be designed to allow easy removal and storage of all specified equipment. All equipment shall be separated by dividers or tubes.

The compartment will be designed to hold a 2500-gallon portable tank

#### LADDER COMPARTMENT DOOR

Compartment will have a single, vertically hinged, painted-finish stainless steel door with a stainless-steel D-ring latching handle. Door(s) shall be wired to the door ajar circuit.

#### LADDER BRACKET IN HOSEBED

The extension ladder and roof ladder shall be mounted in the right-side portion of the hose bed.

A front nose box and rear latching mechanism will be provided to secure the ladders. The roof ladder will be mounted on top of the extension ladder.

#### AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the front portion of the driver side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

#### COMPARTMENT DOORS

The wheel well compartments, where specified, will have vertically hinged, painted, stainless steel doors with Southco #E3-17-22 all-stainless-steel door latches. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

#### AIR BOTTLE STORAGE COMPARTMENT (SINGLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the rear portion of the driver side rear wheel well area. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

#### COMPARTMENT DOORS

The wheel well compartments, where specified, will have vertically hinged, painted, stainless steel doors with Southco #E3-17-22 all-stainless-steel door latches. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

#### AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the front portion of the officer side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

#### COMPARTMENT DOORS

The wheel well compartments, where specified, will have vertically hinged, painted, stainless steel doors with Southco #E3-17-22 all-stainless-steel door latches. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

#### AIR BOTTLE STORAGE COMPARTMENT (SINGLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the rear portion of the officer side rear wheel well area. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

#### COMPARTMENT DOORS

The wheel well compartments, where specified, will have vertically hinged, painted, stainless steel doors with Southco #E3-17-22 all-stainless-steel door latches. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

#### TRAYS - PULL OUT

Four (4) Accuride slide out trays shall be provided and installed in customer specified location.

Sliding tray where specified shall be mounted in a manner that provides for maximum clearance overhead.

The tray shall have a capacity of 300 pounds in the fully extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation.

Tray will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

LOCATION: L1, L3, R1, R2

#### TRAY - AJUSTABLE PULL OUT TRAY

A total of two (2) adjustable slide out trays shall be provided and installed in customer specified location. L1 & L3

The tray shall have a minimum capacity of 200 pounds in the fully extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation and are attached to stainless steel unit-strut tracking.

Tray will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

#### FLOOR MATTING

All compartment floors shall be lined with Black Mateflex 13" X 13" x 9/16" interlocking tiles with tapered edging at the front compartment opening.

#### COMPARTMENT DOORS

Doors to be fabricated of 304 grade stainless steel with 18 gauge inner and outer panels.

The doors shall be 3/4" thick and reduce the compartment depth by approximately 5/8" with the door closed.

The double panel design provides strength and a tight fit with 5/8" insulation installed between the panels for sound dampening.

Doors shall be of a rigid design. Door outer panel edges will be folded and welded to the inner panel.

Welding of the inner panel directly to the outer panel face shall not be permitted due to distortion caused by welding.

The use of body filler prior to painting of the outer door panels shall not be permitted. No Exception

Each door is to have closed cell rubber seal to provide a weatherproof seal between the door and compartment.

The compartment doors shall pivot on full-length stainless-steel piano hinges with a 3/16" pin diameter.

Hinges shall be welded to compartment wall and bolted to doors with 10-24 stainless steel bolts. Compartment doors will have stainless steel flush bent "D" ring handles. Latching mechanism shall be non-locking safety slam positive latch. Gasket material is placed between the door handles and outer door panels to prevent electrolytic reaction between dissimilar metals to protect paint finish.

Mechanism is enclosed in stainless steel not exposed to equipment stored in compartment.

An inner two-point latch shall be provided on the second door of all double doors with a rubber covered pull cable when applicable.

Interior of doors shall be left natural stainless with swirl finish applied to give a lasting and pleasing appearance.

#### DRIP RAILS

Bright aluminum "J" channel shall be provided over each lower side body compartment and at the front and rear of the compartments.

#### DOOR CLOSURES

All vertically hinged doors shall have power lift gas filled cylinders installed.

Closure shall assist in the closing of door once it has past the halfway point.

#### 12 VOLT ELECTRICAL SYSTEM

All wiring and electrical equipment shall meet N.F.P.A. 1901 (2016 edition) and SAE standards.

A master optical warning device switch that energizes all the optical warning devices shall be provided.

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way. Switching of modes shall be controlled by the parking brake.

All wiring to be GXL ultra high temperature cross link type.

Wiring installed by the builder to be run in protective split loom where exposed to the outside.

Where wires pass through body compartments or panels grommets, snap bushings, or compression fittings shall be utilized.

All wiring harnesses and associated wiring shall be secured with nylon "ultraviolet resistant" cable ties or bolted to the body with cable clamps.

Polyolefin "heat shrink" tubing with adhesive or Deutsch watertight connectors shall be used on all exterior wiring connections.

Flexible non-conductive polyurethane film shall be sprayed on all terminal studs, relays, starter, batteries, etc. to prevent corrosion.

All wiring shall be protected by automatic reset circuit breakers which conform to SAE standards. Any required exterior fuses shall be protected by an environmentally sealed fuse holder.

The breakers shall be selected to prevent wire damage when subjected to extreme current overload. Wiring to be color, function, and/or number coded.

A Class I power distribution relay board shall be utilized.

Distribution board contains independently switching relays with selectable input polarity. Relays can be connected in either their normally open or normally closed positions.

Relay board features heavy duty components, visual diagnostics, and load management inputs. System is user friendly for trouble shooting.

A wiring diagram for the body electrical system shall be included with the apparatus.

## JUNCTION BOX

The electrical junction box for all 12-volt wiring shall be located in a convenient location. It will be recessed into the compartment wall not to protrude into the storage area. It shall have a removable access panel.



The compartment shall be sealed and weatherproof. All components in compartment shall have identification tags.

## CLEARANCE LIGHTS

All required Clearance lights shall be provided at the rear and on each side of the unit to meet Federal regulations. All lights will be (LED) Light Emitting Diode type with a five (5) year warranty.

On apparatus 30 feet in length or longer, a Truck lite model 60072Y Amber LED turn signal light with stainless steel flange shall be mounted one (1) each side in rear wheel well area at approximately running board height.

## LED STEP AREA LIGHTING

Four (4) step area lights shall be provided. One mounted each side on the front compartment face to illuminate the panel running board steps and two mounted at the rear of the unit to illuminate the rear tailboard step. These lights shall be activated when the parking brake is applied.

Whelen 3SCOCDCR series 3.00" round LED lights shall be utilized. Depending on body application the lights will either be mounted in a rubber grommet or surface mounted with a chrome flange.

## HAZARD LIGHT

A red flashing light shall be located in the driving compartment, and shall be illuminated automatically whenever the apparatus parking brake is not fully engaged and any passenger or equipment compartment door is open, any ladder or equipment rack is not in the stowed position, a stabilizer system is deployed, a powered light tower is extended, or any other device is opened,

extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved. The lights shall be marked "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

#### LICENSE PLATE LIGHT

One (1) Truck lite model 15055 LED license plate light and bracket shall be provided on the rear of the unit.

#### EMERGENCY WARNING LIGHT SWITCH CONTROLS

All warning light switches shall be mounted in the cab in a readily accessible location.

A master switch and individual switches to be provided to allow preselection of lights. The light switches are to be "rocker" type with an internal indicator light to show when the switch is energized. All switches to be properly identified and mounted in a removable panel for ease in servicing. Identification of the switches shall be done by either printing or etching on the switch panel.

#### WHELEN M6FCV4 QUAD CLUSTER REAR DOT LIGHTING BACKUP LIGHTS

Two (2) Whelen model M6BUW Super LED backup lights

#### STOP/TAILLIGHTS

Two (2) Whelen model M6BTT series Super LED Brake/Taillights

#### DIRECTIONAL LIGHTS

Two (2) Whelen model M6T series Super LED arrow directional turn signal lights

The backup lights, stop/taillights, and directional lights along with rear lower-level warning lights shall be installed on the lower rear face of the unit and shall be recessed in chrome plated flange.

## COMPARTMENT LIGHTS

One (1) Sound Off Signal model ECVCLLED10, 10” strip LED compartment light shall be provided in each compartment. The lighting shall be mounted in the ceiling of the compartment. All compartment lighting shall be automatic by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

## BACK-UP ALARM

There shall be electronic beeper that sounds when the truck is placed in reverse. The beeper shall be heard over all engine noise, by persons near or on the truck.

## LED GROUND LIGHTING

The apparatus shall be equipped with lighting capable of providing illumination at a minimum level of two (2) foot candle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits, which shall be activated automatically when the parking brake is set. Lights shall be installed in a manner that illuminates all walkways and steps for safe operation of the apparatus. TecNiq E10-WSOO-1 6.00" LED lights mounted in a stainless-steel bracket shall be utilized.

One (1) light located each side under the panel running boards.

Two (2) lights mounted under the rear step.

One (1) light located each side under the cab steps.

## PUMP COMPARTMENT LIGHT

One (1) Sound Off model ECVCSLLED10-10” LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operator’s panel.

## ENGINE COMPARTMENT LIGHT

There shall be a TecNiq E18 high output utility light with switch, mounted inside engine compartment, to provide sufficient lighting for vehicle maintenance.

## HOSE BED LIGHTS

There shall be two (2) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens lights mounted at the front of the hose bed. The lights will be activated by a switch located on the pump panel.

## DUNNAGE AREA LIGHTS

There shall be two (2) Whelen 3SCOCDCR series 3.00" round LED lights provided and mounted in the dunnage area to provide adequate illumination of this area. The lights will be activated when the parking brake is applied.

## ELECTRICAL LOAD MANAGER

The apparatus shall be equipped with an Innovative Control Electrical Load Manager (ELM) for performing electrical load management. The ELM shall have 16 programmable 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 master warning switch, or to sequence and shed along with the priority. Output 13 shall be designated to activate a fast idle system. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The ELM shall have a digital display to indicate system voltage in normal operation mode and indicate the output configuration during programming mode. The ELM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection. The ELM shall have an operating temperature range of -40C to +105C (-40F to +220F).

## WHELEN NFPA APPROVED UPPER-LEVEL LIGHT PACKAGE

### ZONE A - FRONT UPPER

A Whelen Freedom IV model F4N0VLED 60" lightbar shall be mounted centered on the front of the cab roof. The lightbar shall be 60.00 inches in length. The lightbar shall feature four (4)

corner Red Linear-LEDs and four (4) front Linear LEDs (2) Red & (2) Clear lights. The clear lights shall be disabled when the parking brake is engaged.

#### ZONE B & D - SIDE UPPER

Two (2) Whelen M9 Super LED lights with chrome bezels will be mounted one each side on the upper front side corners of the body.

Two (2) Whelen M9 Super LED lights with chrome bezels will be mounted one each side on the upper rear side corners of the body.

#### ZONE C - REAR UPPER

Two (2) Whelen M9 Super LED lights with chrome bezels will be mounted on the upper rear of the body.

#### UPPER-LEVEL LIGHT LENS COLOR

The upper-level lights shall have red lenses.

#### WHELEN LOWER-LEVEL LIGHTING

##### ZONE A - LOWER

Four (4) M7 series Super LED lights with chrome bezels mounted on the lower portion of the front grille.

##### ZONE B & D- SIDE LOWER

Two (2) M4 series Super LED lights with chrome bezels mounted one (1) each side on the front cab fenders above the air horns.

Two (2) M4 series Super LED lights with chrome bezels mounted one (1) each side on the front bumper.

Four (4) M6 series Super LED lights with chrome bezels mounted two (2) each side in the rear body fender area.

##### ZONE C - LOWER

Two (2) M6 Super LED lights mounted on the lower rear of the apparatus in M6FCV4 chrome housing.

#### LOWER-LEVEL LIGHT LENS COLOR

The lower-level lights shall have red lenses.

#### ARROW STICK

One (1) Whelen TAZ86 LED Traffic Advisor light shall be mounted center rear of unit. The TADCTL1 control head shall be mounted in the chassis cab. 1.74" high x 2.17" deep x 36.00" long

The unit shall include eight (8) Linz6 LED lamps with amber lens.

#### WHELEN 295SLSA1 ELECTRONIC SIREN AMPLIFIER

A Whelen Model 295SLSA1 electronic siren amplifier shall be provided and installed in the cab within reach of the officer and driver.

Standard features include Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Airhorn, and Piercer tones. PTT (Push to Talk) switch on unidirectional microphone over-rides all siren functions. All siren functions are backlit in a soft, non-glare green for ease of nighttime visibility. Contemporary styling complements most Whelen power controls and Traffic Advisor Control Consoles for proper aesthetic stacking. An adjustable bail bracket allows mounting in a variety of positions. Each model is mounted on a slide out chassis with an integral quick disconnect plug for ease of maintenance or replacement. Park Kill feature, disables the siren when the vehicle is in park. Volume control knob on faceplate standard.

Selectable 100- or 200-watt output, standard.

Si-Test®, silent self-diagnostic.

5-year warranty on amplifier.

Size: 2-1/2" (64mm) H x 6" (152mm) W x 6-7/8" (175mm) D

#### SIREN SPEAKER

One (1), 100-watt siren speaker shall be recess mounted in the front bumper.

#### Q2B SIREN - RECESS MOUNT

One (1) Federal Signal Q2B siren model #Q2B-012NNSD electro-mechanical siren shall be provided. The Q2B siren shall be a streamlined, chrome-plated siren, designed to provide reliable and long-life operation. The electro-mechanical siren shall produce the distinctive Q2B sound that is a registered trademark of Federal Signal and shall be provided with a heavy-duty clutch

and an electric brake. The Q2B siren shall measure 10.5" high x 14" long x 10" deep and shall produce 123 decibels at ten feet. The siren shall operate off the vehicles 12V system.

The siren shall be active only when the master warning switch is on, to prevent accidental engagement. A momentary siren brake rocker switch shall be provided in the switch panel on the dash.

The motor of the Q2B siren shall be recess-mounted in the front bumper. The front of the siren shall extend approximately 4.50" forward, beyond the end of the bumper.

#### FOOT SIREN SWITCH

There shall be a Line master SP-491-S119 momentary floor mounted foot switch provided for Q2B Siren operation and installed on the driver's side floor in the cab.

#### AIR HORNS - ON SIDE HOOD

Two (2) Grover Stutter tone air horns will be mounted one (1) each side on the side of the hood.

#### AIR HORN CONTROL - CENTER LANYARD

The air horn activation shall be accomplished through a center ceiling mounted lanyard cable accessible to the driver and officer.

#### SCENE LIGHTS

Six (6) Whelen model M9LZC Super-LED, 24 diode (4-5/16" high x 6-3/4" wide) white scene lights will be installed on the body. The lights feature inner optics that direct light downward.

Two (2) located each side of the body, one (1) at the front and one (1) at the rear, and two (2) located on the rear face of the unit.

Lights will be controlled by three individual switches located in the cab. Rear lights will also be activated when unit is put into reverse.

#### HARRISON HYDRAULIC DRIVEN AC ELECTRIC SYSTEM

The generator shall be one (1) Harrison MAS Hydraulic Driven Generator rated at 6,000 watts, 50/25 amps, 120/240VAC, 60Hz, 1-phase.

The generator shall be designed and assembled by a company with no less than 20 years' experience in the manufacture of hydraulic driven generators.

The generator shall use a structural steel frame which affords protection to the components and provides a unitized mounting module.

The generator shall use a cover consisting of NFPA approved diamond tread plate.

The generator shall use a Self-Sealing Air Intake to prevent recirculation of exhaust air.

The generator shall use a Twin Draft Air Duct for the alternator and heat exchanger; located on the same side of the generator.

The generator shall be designed to utilize Dual-Fan Technology for cooling.

The generator shall use a single heat exchanger to cool the hydraulic oil.

The generator shall use an industrial type alternator with heavy-duty bearings and a brushless design.

The generator shall use an axial piston hydraulic motor.

The generator shall use an axial piston variable displacement hydraulic pump.

The generator shall use a meter to monitor the frequency, voltage, and amperage of each leg.

The generator shall have top access to the oil filter, oil fill tube and electrical interface box.

The generator shall not utilize electronic controls or a multiplex system to control the frequency.

The generator shall be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator shall be capable of being used while vehicle is either stationary or in motion.

The generator shall be capable of normal operation using a commonly available premium hydraulic oil; Mobile DTE series or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

When properly installed, the generator shall be warranted for a period of not less than two (2) years or 2000 hours, whichever should come first.

## LINE VOLTAGE ELECTRICAL SYSTEM

### GENERAL REQUIREMENTS

#### Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz,  $\pm 3$  Hz when producing power at all levels between no load and full rated power.

Any fixed line voltage power source shall produce electric power at the rated voltage  $\pm 10$  percent when producing power at all levels between no load and full rated power. The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall



be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

#### Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to NFPA 70, National Electrical Code, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in NFPA 70, the requirements in this chapter shall apply.

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

#### Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations. Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4. If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

#### Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of NFPA 70. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding. The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of NFPA 70. Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

#### Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum ampere rating, as defined in 310.15, “Ampacities for Conductors Rated 0–2000 Volts,” of NFPA 70, of 115 percent of the rated ampere on the power source specification label. A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

#### Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

#### Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source. The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

#### Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer’s instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

#### Instrumentation

If the power source is rated at less than 3 kW, a “Power On” indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided. If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator’s panel:

- 1) Voltmeter
- 2) Current meters for each ungrounded leg

- 3) Frequency (Hz) meter
- 4) Power source hour meter

The instrumentation shall be permanently mounted at an operator's panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

#### Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator's control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator's station on the apparatus.

#### Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

#### Over-Current Protection

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components.

#### Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

#### Branch Circuit Over-Current Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of NFPA 70.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

#### Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

- 1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.

2) Only one circuit is hardwired to the power source, which is protected by an integrated overcurrent device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

#### Wiring Methods

Fixed wiring systems shall be limited to the following:

- 1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
- 2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

- 1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
- 2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used. Splices shall be made only in a listed junction box.

### Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

### Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

### Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of NFPA 70.

Conductors used in conduit shall be sized in accordance with 310.15, “Ampacities for Conductors Rated 0–2000 Volts,” of NFPA 70. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, “Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes,” of NFPA 70. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, “Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies,” of NFPA 70.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer’s instructions.

Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be “switch

rated” (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

#### Receptacles and Inlet Devices

##### Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, “Receptacles in Damp or Wet Locations,” of NFPA 70.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground.

Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground.

All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

##### Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

#### LOAD CENTER

A, Square D, breaker box shall be provided with separate breakers for each light and/or outlet. Breakers will be rated to load demand. The load center shall be installed in customer specified location.

#### CIRCUIT BREAKERS

Individual breakers shall be provided for all online equipment to isolate a tripped breaker from affecting any other online item.

#### OUTLETS

Six (6) 120-volt 20 amp. twist-lock outlets (NEMA L5-20) with weatherproof cover shall be provided with wiring in flexible conduit to circuit breaker panel.

Location shall be:

#### ELECTRIC CABLE REEL

One (1) Hannay #ECR-1616-17-18 series electric cable reel with electric rewind, shall be provided on the apparatus. Reel shall have three (3) conductor wiring and three (3) fully enclosed collector rings. The reel shall be rated for continuous duty and installed to be easily accessible for removal, cord access, maintenance, and servicing.

The power rewind cable reel spool areas shall be visible to the operator during the rewind operation, or the reel spools shall be encapsulated to prevent cable from spooling off the reel. Power rewind type reels shall have the control in a position where the operator can safely observe the rewinding operations. The rewind control or crank shall not be over 72 inches above the operator's standing position.

The 12-volt electrical rewind supply cable shall be adequate size for reel capacity and protected with a circuit breaker sized for the cable and located at the power source. The rewind control shall be a Hannay #900-30 push sealed button with operational label next to button.

#### REEL CAPACITY

Each reel shall be designed to hold 110 percent of the capacity needed for the intended cable length. The wire size shall be in accordance with NEC Table 400-5(A).

#### LABELING



A label shall be provided in a readily visible location adjacent to any permanently connected reel. It shall indicate the following: Current rating, Current type, Phase, Voltage, Total cable length.

#### ELECTRICAL SUPPLY WIRING TO REEL

The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of reel. The reel shall be wired to the breaker box and circuit breaker sized to wire size.

#### ELECTRICAL CORD

The reel shall be provided with one hundred fifty feet (150') of 10/3 yellow electrical cable, type SEO W-A, 30-amp, 120-volt wire.

#### REEL MOUNTING LOCATION

Reel to be mounted in compartment as directed by the Fire Department.

#### PAINT AND PREPARATION

All metal surfaces will be properly sanded, prepared, and finished ready for our Axalta Coating Systems pretreatment. This is done to insure optimum adhesion, corrosion resistance, and durability.

After pretreatment, 1220S Axalta Coating Systems 5000 URO primer filler is applied designed to fill any minor surface defects and provide an adhesion layer between the pretreatment and the Imron Base Coat/Clear Coat. This is also applied to improve color gloss, retention, and durability of the paint.

Next the URO primer will be sanded to a smooth prepainting surface. The surface will be decontaminated and prepared for application of High Solids Axalta Coating Systems Productive Base Coat/Clear Coat finish to complete the finished paint process.

A full inspection is performed of Defects, Depth Imagery, Gloss, Film Build, Color Match and Texture, all to meet or exceed Axalta Coating Systems OEM fleet finish specifications.

Body assemblies that cannot be finish painted upon assembly shall be painted prior to finish assembly. All doors are removed and painted separate from the body.

Prior to reassembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items; a gasket material or silicone sealant shall be applied to prevent damage to the finish painted surfaces and to protect against electrolysis between dissimilar metals.

Touch up paint shall be provided for each color paint used.

The complete apparatus body will be painted a single color.

The cab shall be ordered painted White from the chassis supplier. The lower portion of the cab and cab door jambs will be painted to match the body color.

Paint Break Line to be determined at Pre-Paint Inspection.

Upper Cab Color: White - Paint #\_\_\_\_\_

Lower Cab and Body paint Color: Red - Paint#\_\_\_\_\_

#### LETTERING

Genuine gold leaf lettering, approximately 3.00" high shall be provided. The gold leaf used shall be genuine 23 karat.

The gold leaf shall come with a 1-year warranty against fading or deterioration.

Included will be a maximum of sixty-five (65) three (3) inch letters.

#### REFLECTIVE STRIPING

A 6" wide white reflective stripe shall be applied to the unit in a straight line.

Per NFPA 15.9.3.1 this shall include at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

#### GOLD LEAF EMBLEMS

Two (2) emblems or Maltese crosses shall be provided one (1) each side as directed by the Fire Dept. Emblems or crosses will be genuine 23 karat gold leaf. The gold leaf shall come with a 1-year warranty against fading or deterioration.

#### REFLECTIVE MATERIAL - INTERIOR CAB DOOR

The cab doors shall have a minimum of 96 square inches of reflective material affixed to the inside of each door per NFPA 1901 14.1.6

#### REFLECTIVE CHEVRON - NFPA 15.9.3.2

50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" in width.

Stripe Colors will be Red & Yellow.

This will be all the area above and beside the rear dump valve.

#### Warranties

##### BODY WARRANTY

The manufacturer shall warrant the entire stainless-steel body against rust and/or full corrosion perforation and metal fatigue for a period of thirty (30) years from the date of delivery to the original purchaser, provided the apparatus is used in a normal and reasonable manner.

The term "body" shall be inclusive of the following:

- Hose bed side walls
- Compartments and compartment support
- Compartment doors except roll-up doors, when specified
- Complete subframe including pump house framing

##### WATER TANK WARRANTY

The contracted tank manufacturer shall warrant that the tank provided shall be of first-class workmanship, and that, under normal conditions, shall show no defects due to faulty design, workmanship, or material for the Lifetime of the vehicle to the original owner.

##### PUMP WARRANTY

The contracted pump manufacturer shall warrant that the pump provided shall be of first-class workmanship, and that, under normal conditions, shall show no defects due to faulty design, workmanship, or materials for a period of five (5) years.

#### PUMP PLUMBING WARRANTY

The galvanized or stainless-steel plumbing components, as specified, and ancillary brass fittings used in the construction of the water/foam plumbing system, shall be warranted for a period of ten (10) years or 100,000 miles. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser, for a period of ten years from the date of delivery.

#### 12 VOLT ELECTRICAL WARRANTY

The 12-volt electrical system and ancillary components used in the construction of the apparatus shall be warranted for a period of five (5) years. This covers failures caused by defective design or workmanship, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of five (5) years from the date of delivery.

Items specifically covered are:

- Electrical harnesses and harness installation
- Switches, circuit breakers and relays
- LED Lighting: FMVSS required and warning lights
- Electrical connectors and connections, against corrosion or deterioration

Items excluded as they are covered by specific warranties supplied by the manufacturer of the components:

- Chassis electrical systems and components installed by the chassis manufacturer.
- Batteries, battery chargers, two-way radio equipment, and similar equipment.
- Periodic cleaning and tightening of battery terminal connections.
- Accident, negligence, or unauthorized alteration of original equipment.

#### PAINT WARRANTY

The paint on the unit will be provided with a ten (10) year paint finish guarantee which will cover the finish for the following items:

- Peeling or delamination of the topcoat and/or other layers of paint.

- Cracking or checking.
- Loss of gloss caused by defective finishes which are covered by this guarantee.

#### CHASSIS WARRANTY

Chassis shall be warranted by the chassis manufacturer as per the chassis manufacturer's issued warranty.

100% WARRANTY ON ALL OTHER ITEMS FOR ONE YEAR.

Additional equipment:

#### PORTABLE TANK

Fol-Da-Tank Portable tank 2500-gallon Vinyl (Red), Aluminum frame.

#### SUCTION HOSE

Two (2) Firequip Maxi-Flex 6" x 10' light weight PVC Suction hose with male and 6" long handled female couplers.

#### SUCTION HOSE STRAINER

One (1) South Park #BS4522AC, 6.00"-barrel strainer will be provided and mounted in customer specified location.

#### 10' FOLDING LADDER

One (1) Alco-Lite model #FL-10, 10' folding ladder shall be provided. Ladder shall consist of 1-section aluminum ladder with rubber feet and shall meet or exceed the latest NFPA standards.

#### 14' ROOF LADDER

One (1) Alco-Lite model #PRL-14, 14' roof ladder shall be provided. Ladder shall consist of a single section aluminum ladder with folding steel hooks on one end and steel spikes on the other end. Ladder shall meet or exceed the latest NFPA standards.

#### 24' EXTENSION LADDER

One (1) Alco-Lite #PEL-24, 24' extension ladder. Ladder shall consist of 2 aluminum sections. Ladder shall meet or exceed the latest NFPA standards.

#### 8' FIBERGLASS PIKE POLE

One (1) Duo-Safety Type FP, 8' fiberglass handle pike pole shall be provided consisting of a 8' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

#### PIKE POLE

One (1) Duo-Safety Type FP, 10' fiberglass handle pike pole shall be provided consisting of a 10' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

#### WHEEL CHOCKS

Two (2) Zico AC32 wheel chocks will be provided and mounted under the left front compartment.

#### AIR PACK BRACKETS

Four (4) Securall SCBA air pack brackets shall be supplied and mounted in the SCBA seats in the cab.

## AIR PACK BRACKET

One (1) Ziamatic KD-UH-6-SF air pack bracket shall be supplied and mounted in compartment L2.

## SPANNER WRENCH SET W/HYDRANT WRENCH

One (1) set of Kochek style K45-3Y spanner wrenches shall be provided and mounted in customer specified location. Includes (1) Hydrant wrench and (2) spanner wrenches with mounting bracket.

Location:

## SPANNER WRENCH SET

One (1) set of Kochek style K46-2Y spanner wrenches shall be provided and mounted in customer specified location. Includes (2) spanner wrenches with mounting bracket.

Location:

## Delivery and Service

1. Apparatus must be delivered with a valid Maryland inspection sticker prior to acceptance.
2. For quick service or emergency repairs, the closest dealer or factory-staffed facility in proximity to the company where warranty/repair work is to be performed (must be within 100 mi of McHenry, MD). If warranty/repair work is to be performed at a location other than the manufacturer, a statement must be made naming the party or parties responsible for delivery and pick-up of the apparatus to the location. Expenses that are covered by the manufacturer should be included along with a listing of acceptable firms for performing warranty work.
3. The vendor shall provide training for all members of the company beginning within 15 days of delivery. The training shall instruct personnel in the operation and maintenance of the apparatus.

## Documentation and Delivery

1. The following documentation shall be provided at the time of delivery:
  - a. User manuals
  - b. Care and maintenance instructions for apparatus and any ancillary components or other equipment included.
  - c. Warranty information for apparatus and each component.
  - d. Two (2) electrical wiring diagrams, prepared for the model of chassis and body, should be provided. The bidder should provide, at the time of bid and delivery, an itemized print out of the expected draw of the entire vehicle's electrical system.
  - e. To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, should be certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification should include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus (no exception). A placard should be affixed in the driver's side area stating the third-party agency, the date, the standard and the certificate number of the whole vehicle audit.
2. Apparatus shall be delivered to Deep Creek Volunteer Fire Company (or another specific location to be specified).
3. The vendor will invoice the company on a single invoice. Upon receipt and acceptance of apparatus and all other specified equipment, payment will be made within thirty (30) days as approved by the company.

## Other

1. The vendor shall provide a 100% performance bond
2. The vendor shall provide a pre-payment bond
3. The proposal shall include a late delivery penalty of at least \$100 per day.



## Selection of Bid

Following the submission of proposals, and after careful consideration, Deep Creek Volunteer Fire Company will select a proposal. The safety of our personnel, price, warranty, service, customer care, and staff survey results will all be deciding factors in the selection process. We reserve the right to reject any and all bid packages or waive any technicalities, and further reserve the right in its sole discretion to award the proposal to the most responsible bidder whose offer best responds in quality, fitness, and capacity to the requirements of the proposed work or usage and therefore is in the best interest of the company.

## Other Provisions

No bid will be accepted from, or contract awarded to any person, firm, or corporation that is in arrears or is in default to Deep Creek Volunteer Fire Company for any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to the company, or has failed to perform faithfully any previous contract with the company.

By submitting a proposal, the vendor agrees that its proposal is made without any understanding, agreement, or connection with any other person, firm, or corporation making a proposal for the same purpose and that its proposal is in all respects fair and without collusion or fraud. The bidder shall at all times observe and conform to all laws, ordinances, and regulations of Federal, State, and local governments, which may in any manner affect the preparation of bids or the performance of the contract.

Deep Creek Volunteer Fire Company reserves the right to terminate in whole or any part of this contract, upon written notice to the vendor, in the event of default by the vendor. Default is defined as failure of the vendor to perform any of the provisions of this contract or failure to make sufficient progress so as to endanger performance of this contract in accordance with its terms. In the event of default or termination, the company may procure, upon such terms and in such a manner as may be appropriate, supplies or services similar to those terminated.