Exhibit "A"

SPECIFICATIONS

ONE 2016 MODEL YEAR MACK GRANITE CHASSIS FIRE TRUCK TANKER WITH 3,000 GALLON ELLIPTICAL TANK AND ASSOCIATED EQUIPMENT

EXHIBIT A

GENERAL INFORMATION

The proposed apparatus will be constructed to withstand the severe and continuous use encountered during emergency fire fighting services. The apparatus will be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the National Fire Protection Association Pamphlet No. 1901, latest edition.

Bidder will furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

FIRE APPARATUS DOCUMENTATION

Bidder will supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturer's record of apparatus construction details, including the following information:

- Owners name and address
- Apparatus manufacturer, model and serial number
- Chassis make, model and serial number
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment, front and rear
- Engine make, model, serial number, rated horsepower, rated speed and governed speed
- Type of fuels and fuel tank capacity
- Electrical system voltage and alternator output in amps.
- Battery make, model and total capacity in cold crank amps (CCA)
- Transmission make, model and serial number. If so equipped chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Pump transmission make, model, serial number and gear ratio
- Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Water tank certified capacity in gallons or liters
- Paint manufacturer and paint number(s)

Certification of slip resistance of all stepping, standing and walking surfaces.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of suction capability.

If the apparatus has a fire pump or an industrial supply pump, a copy of the apparatus manufacturer's approval for stationary pumping applications.

If the apparatus has a fire pump or an industrial supply pump, the engine manufacturers certified brake horsepower curve for the engine furnished, showing the maximum governed speed.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturers certification of hydrostatic test (if applicable).

If the apparatus has a fire pump or an industrial supply pump, the Underwriters Laboratory certification of inspection and test for the fire pump (if applicable).

If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source (if applicable).

Weight documents from certified scale - showing actual loading on the front axle, rear axle(s) and overall vehicle (with the water tank full but without personnel, equipment and hose) will be supplied with the complete vehicle to determine compliance with NFPA-1901

Written load analysis and results of electrical performance tests.

If the apparatus is equipped with a water tank, the certification of water tank capacity by the tank manufacturer.

The proposed chassis will be certified by Bidder as conforming to all applicable Federal Motor Vehicle Safety Standards (FMVSS) in effect at the date of contract. This will be attested to by the attachment of a FMVSS certify caution label on the vehicle by Bidder, who will be recognized as the responsible final manufacturer.

RECORDS

Bidder will be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the proposed apparatus. These records will be maintained in Bidder's factory for a minimum of twenty (20) years. The file will contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The purchaser will have access to any and all documents contained in this file upon official written request.

GENERAL CONSTRUCTION

The proposed apparatus, assemblies, subassemblies, component parts, etc., will be designed and constructed with the due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is subjected to when placed in service. All parts of the apparatus will be designed with a factor of safety, which is equal to or greater than that which is considered standard and acceptable for this class of equipment in fire fighting service. All parts of the proposed apparatus will be strong enough to withstand general service under full load. The apparatus will be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

The apparatus will be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between front and rear axles that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters will be carried without overloading or injuring the apparatus.

MANUFACTURING FACILITY

The apparatus will be fabricated and assembled in the facility solely owned and operated by the Bidder.

SERVICE CENTER AND PARTS DEPOT - MANUFACTURER

Bidder shall have an authorized service center within a 100-mile radius of the Stillwater Township.

CHANGE ORDERS AND CREDITS

All change orders will be presented to the Purchaser's designated representative for approval prior to work being done or material ordered. The change orders will reflect a charge or credit as appropriate.

PRICES AND PAYMENTS

The bid price will be F.O.B. Destination, on a delivered and accepted basis at the Fire Department.

Total price on Bidder's proposal sheet will include all items listed in these specifications.

Bidder has computed pricing less federal and state taxes. It is understood that any applicable taxes will be added to the proposed prices, unless the purchaser furnishes appropriate tax-exempt forms.

PAYMENT TERMS

The Purchaser shall be invoiced for the unit, including any approved Change Orders, at least 30 days prior to the completion of the apparatus.

The apparatus shall be paid for, in full, upon delivery to the Purchaser.

TRANSFER OF TITLE

When payment in full is received, the Manufacturer shall present an Original Equipment Manufacturers (OEM) title to the Purchaser.

DELIVERY TIME

Bidder shall deliver the completed fire apparatus within 300 days of the execution of the Contract.

PERFORMANCE BOND

A performance bond will be supplied by the Bidder upon acceptance of the signed sales contract for the apparatus. The performance bond will be for an amount equal to the full contract price (i.e. 100% bond).

FAIR, ETHICAL AND LEGAL COMPETITION

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. will have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

APPROVAL DRAWING

A detailed drawing of the apparatus will be provided to the Stillwater Township for approval before construction begins. A copy of this drawing will also be provided to the manufacturer's representative. Upon Stillwater Township approval, the finalized drawing will become a part of the total contract.

The drawing will show, but is not limited to, such items as the chassis make and model, major components, location of lights, sirens, all compartment locations and dimensions, special suctions, discharges, etc. The drawing will be a visual interpretation of the apparatus as it is to be supplied.

INSPECTION VISITS

Bidder will provide five (5) factory inspection trips to Bidder's facility. Transportation, meals, lodging, and other requisite expenses will be the Bidder's responsibility.

Accommodations will be for five (5) Fire Department representatives per trip.

The factory visits will occur at the following stages of production of the apparatus:

- Pre-construction / blueprint review.
- Commercial chassis arrival.
- Midpoint completion of entire apparatus.
- Apparatus completion, prior to finish paint.
- Final inspection upon completion.

Travel arrangements less than 300 miles from the manufacturing facility will be via ground transportation.

The customer maintains the right to inspect the apparatus, within Bidder's normal business hours. At any other point during construction expenses incurred during non-specified visits will be the responsibility of the customer.

During inspection visits, the customer reserves the right to conduct actual performance tests to evaluate completed portions of the unit. Testing will be accomplished with the assistance and resources of the contractor.

DELIVERY

Delivery of the apparatus to the Fire Department will remain Bidder's responsibility.

A qualified and responsible representative of Bidder will deliver the apparatus to the Fire Department.

In order to store the completed unit in the facilities of the Purchaser, the unit must be insured by the Purchaser upon delivery of the unit to the Purchaser.

DEMONSTRATION AND FAMILIARIZATION

On initial delivery of the fire apparatus, a qualified and responsible representative of the contractor {will/shall} demonstrate the apparatus and provide initial instruction to representatives of the customer regarding the operation, care, and maintenance of the apparatus and equipment supplied.

The demonstration and familiarization will be for a period of eight (8) hours at mutually agreed upon times.

INSTRUCTION MANUALS/DRAWINGS, SCHEMATIC

Bidder will supply at time of delivery, two (2) CD copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual will contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device.
- Wiring diagrams.
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

VEHICLE FLUIDS PLATE

As required by NFPA-1901, Bidder will affix a permanent plate in the driver's compartment specifying the quantity and type of the following fluids used in the vehicle:

A permanent plate in the driving compartment will specify the quantity and type of the following fluids used in the vehicle:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle(s) lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Cab tilt mechanism
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Aerial systems

PRINCIPAL APPARATUS DIMENSIONS & G.V.W.R.

The principal dimensions of the completed apparatus will not exceed the following maximum acceptable dimensions:

Bidder PROPOSED DIMENSIONS:

- OVERALL LENGTH: 408" not to exceed 34' (**critical measurement**)
- OVERALL WIDTH: 114" not to exceed
- OVERALL HEIGHT: 116"not to exceed (Empty)
- WHEELBASE: XXX"

The axle and total weight ratings of the completed apparatus will not be less than the following minimum acceptable weight ratings:

- MINIMUM FRONT G.A.W.R.: XX,XXX lbs.
- MINIMUM REAR G.A.W.R.: XX,XXX lbs.
- MINIMUM TOTAL G.V.W.R.: XX,XXX lbs.

Bidder will include the principal dimensions, front G.A.W.R., rear G.A.W.R., and total G.V.W.R. of the proposed apparatus. Additionally, Bidder will provide a weight distribution of the fully loaded, completed vehicle; this will include a filled water tank, specified hose load, miscellaneous equipment allowance in accordance with NFPA-1901 requirements, and an equivalent personnel load of 250 lbs. per seating position.

U.S.A. MANUFACTURER

The entire apparatus will be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service.

QUALITY MANAGEMENT

Bidder shall be certified ISO 9001.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body will meet NFPA #1901 anti-slip standards. Aluminum tread plate utilized for stepping, standing, and walking surfaces will be Alcoa No-Slip type. This material will be a minimum 3/16 (0.1875") in thickness. Bidder will supply proof of compliance with this requirement. All vertical surfaces on the body, which incorporate aluminum tread plate material, will utilize the same material pattern to provide a consistent overall appearance.

AMP DRAW REPORT

The Bidder shall provide with their bid proposal and at the time of delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

A written load analysis, which shall include the following:

- The rating of the alternator.
- The minimum continuous load of each component that is specified per: Applicable NFPA-1901.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

All of the above listed items shall be provided by the Bidder per the applicable NFPA-1901.

GENERAL APPARATUS DESCRIPTION "MOBILE WATER SUPPLY"

The unit will be designed to conform fully to the "Mobile Water Supply Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2009 Revision), which will include the following required chapters as stated in this revision:

- Chapter 1 Administration
- Chapter 2 Referenced Publications
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 7 Mobile Water Supply Fire Apparatus
- Chapter 12 Chassis and Vehicle Components
- Chapter 13 Low Voltage Electrical Systems and Warning Devices
- Chapter 14 Driving and Crew Areas
- Chapter 15 Body, Compartments and Equipment Mounting
- Chapter 18 Water Tanks

CAB SAFETY SIGNS

The following safety signs will be provided in the cab:

- A label displaying the maximum number of personnel the vehicle is designed to carry will be visible to the driver.
- "Occupants will be seated and belted when apparatus is in motion" signs will be visible from each seat.
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).
- A label displaying the height, length, and GVWR of the vehicle will be visible to driver.
- This label will indicate that the fire department will revise the dimension if vehicle height changes while vehicle is in service.

CHASSIS DATA LABELS

The following information will be on labels affixed to the vehicle:

Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid (if applicable)
- Drive Axle(s) Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid (if applicable)
- Equipment Rack Fluid (if applicable)
- Air Compressor System Lubricant
- Generator System Lubricant (if applicable)
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Aerial Hydraulic Fluid (if applicable)
- Maximum Tire Speed Rating

Chassis Data

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Manufacturers weight certification:

- Gross Vehicle (or Combination) Weight Rating (GVWR or GCWR)
- Gross Axle Weight Rating, Front
- Gross Axle Weight Rating, Rear

ROLLOVER STABILITY

The apparatus will meet the criteria defined in 4.13.1 for rollover stability as defined in the 2009 NFPA Standard for Automotive Fire Apparatus.

CENTER OF GRAVITY CALCULATION

The apparatus calculated or measured center of gravity will be no higher than 80 percent of the rear axle width.

****** CHASSIS ******

CHASSIS SPECIFICATION

Chassis: Mack Granite

ORDER/CUSTOMER/VEHICLE INFORMATION

INITIAL REGISTRATION LOCATION, UNITED STATES, NEW JERSEY LANGUAGE, ENGLISHIDLE EMISSION CERTIFICATION, IDLE EMISSION CERTIFICATION - CARB 08
TYPE OF SERVICE, MUNICIPAL
VEHICLE APPLICATION CLASS, HEAVY VOCATIONAL - Unlimited operation on concrete, asphalt, or maintained gravel/packed dirt with a maximum 3% grade; limited operation on unmaintained surfaces with maximum 5% grade; limited operation on concrete, asphalt, or maintained gravel/packed dirt with maximum 10% grade. (3 AXLES) 78,000 lbs. (35,281 kg) MAX GVW. (4 AXLES) 80,000 lbs. (36,288 kg) MAX GVW.
CARRIER APPLICATION, WITH CRD150-151, Unlimited miles on 3% grade maintained gravel/packed dirt or paved, Max 15% miles on 10% grade maintained gravel/packed dirt or paved, Max 10% miles on 5% unmaintained, maintained gravel, packed dirt, or paved. 90000# (41000 kg) MAX GCW. (Carrier Code USA-V1)
VEHICLE TYPE, STRAIGHT TRUCK WITHOUT TRAILERVEHICLE USE AND BODY/TRAILER TYPE, FIRE AND EMERGENCY. .On/Off Hwy
BRAKE - STOPPING DISTANCE, BRAKE REGULATION, STOPPING DISTANCE 94M (310FT) FILE STATUS, QUOTE
PRICE BOOK LEVEL, 2016A PRICE BOOK LEVEL PRODUCT TYPE, PRODUCT TYPE - CML64R TRUCK PRODUCT CLASS, PRODUCT CLASS 28
BACK OFFICE PROCESS, BACK OFFICE PROCESS

OPERATING CONDITIONS

TOPOGRAPHY, GRADES <6% GREATER THAN 98% OF DRIVING DISTANCE MAX GRADE 16%
TRANSPORTAION CYCLE, VOCATIONAL
ROAD CONDITION, WELL MAINTAINED SURFACED ROADS >95% DRIVING DISTANCE
AMBIENT TEMPERATURE UPPER LIMIT, AMBIENT TEMPERATURE HOT. WARMER THAN 104 F (40 C) ALLOWED UP TO 25 HOURS PER YEAR

BVS/FRT AXLE POS/SALES PACKAGES

CHASSIS (BASE MODEL), GU703 6-WHEEL TRUCK
CHASSIS PACKAGING SOLUTIONS, CLEAR BOC PACKAGE 7B INCLUDES: HHF Emission, B Box LH Rail, Air Tank(s) Under B Box - between Frame Rails, Cab Mounted Exhaust REQUIRES: 72 Gallon LH Sleeved Fuel Tank, Omit RH Tank,

ENGINE/TRANSMISSION/CLUTCH

ENGINE, MACK MP8-455M 455 HP @1500-1700 RPM (PEAK) 1650 LB FT. MAX TORQUE @ 1000-1400 RPM
TRANSMISSION, 5 SPEED AUTOMATIC, ALLISON 4500-EVS-5 (4.70/0.76) EMERGENCY SERIES GEN 5 INCLUDES TRANSMISSION COOLER, EXTERNAL OIL COOLER, INTERNAL FILTER, AND OIL LEVEL SENSOR
CLUTCH, OMIT CLUTCH

EXHAUST/EMISSIONS

DPF, CLEARTECH HHF, DPF & SCR FRAME MTD, BOTH RH SIDE UNDER CAB
EXHAUST AFTER-TREATMENT SYSTEM, EXHAUST AFTER-TREATMENT SYSTEM DIESEL PARTIC FILTER CERAMIC
PASSIVE REGEN
DPF SMART SWITCH, NO INHIBIT DPF REGENERATION SWITCH
EXHAUST, EXHAUST - CLEAR BOC, SINGLE (R/S) VERT EXHAUST CAB MOUNTED, LOWER VENTURI DIFFUSER,
TURNED END
SINGLE, BRIGHT FINISH HEAT SHIELD, STACK AND SCR COVER
FURNISH STEEL PAINTED HEAT SHIELD FOR FRAME MTD MACK CAP DPF

ENGINE EQUIPMENT
AIR COMPRESSOR, MERITOR/WABCO 318 18.7 CFM
ALTERNATOR, 270 AMP LEECE NEVILLE ALTERNATOR
BATTERIES, (3) MACK 12V M/F GROUP 31 650/1950 CCA THREADED STUD TYPE W/KALAS CABLES
BUG SCREEN, RADIATOR MOUNTED
TEXACO LONG LIFE ENGINE COOLANT #7998 WITH NITRITES (50/50 mix) to -34 degrees F (-37 degrees Celsius)
SPIN ON CANISTER W/O CHEMICAL FOR USE W/TEXACO EXTENDED LIFE COOLANT ONLY
ENGINE BRAKE, MACK ENGINE BRAKE POWER LEASH FOR MP8
FAN DRIVE, HORTON DM ADVANTAGE 2 SPEED FAN
FUEL-WATER SEPARATOR, MACK W/MANUAL DRAIN VALVE (INTEGRAL W/PRIMARY FUEL FILTER)
HOSES - RADIATOR/HEATER, MACK BRAND EPDM RADIATOR & HEATER HOSES
OIL PAN, OIL PAN
OIL PAN HEATER, W/O OIL PAN HEATER W/O ENGINE COLD START AID
STARTER, 12 VOLT DELCO MTHD 39
TETHER DEVICE, W/O TETHER DEVICE

TRANSMISSION EQUIPMENT/DRIVELINES

CLUTCH ASSIST (AIR), Information is not required
CLUTCH PEDAL, W/O CLUTCH PEDAL
TRANSMISSION BELL HOUSING, ALUMINUM
W/O TRANSMISSION DUSTPROOFING
FURNISH FOR ALLISON TRANSMISSION W/DIRECT MOUNT COOLER
SYNTHETIC LUBRICANT - TRANSMISSION, TRANSYND SYNTHETIC LUBE FOR ALLISON TRANS
VOCATIONAL PACKAGE - ALLISON, ALLISON GEN 5 PACKAGE #198, EMERGENCY VEHICLE SERVICE (EVS)
SPECIFIC - SHIFT TO NEUTRAL W/PARKING BRAKE ENGAGED
WITHOUT DRIVESHAFT GUARD FOR CENTER BEARING
DRIVELINE - MAIN, MERITOR 18 MXL
"XTENDED LUBE"
DRIVELINE - INTERAXLE, MERITOR 17 MXL "XTENDED LUBE"

CAB (A thru G)

MACK (BERGSTROM) INTEGRAL W/HEATER COMBINATION HEATER/DEFROSTER AND CONDITIONER
AIR RESTRICTION MONITOR (INTAKE), W/O AIR RESTRICTION MONITOR
CAB CONFIGURATIONS, LH-DRIVE CA68 CONV CAB
WITHOUT CAB CLEANOUT
CAB MOUNTING, AIR SUSPENSION
CERTIFIED WEIGHT
W/O MISC ELECT SWITCHES OPTION
PARK BRAKE AND ENGINE RUNNING ACTIVATED
(4) DOME LAMPS - DOOR AND SWITCH ACTIVATED
FENDER EXTENSIONS, FENDER EXTENSIONS
GAUGE CLUSTER, EXHAUST PYROMETER AND TRANSMISSION OIL TEMPERATURE GAUGES
GAUGES, ENGLISH/METRIC DISPLAY
WITHOUT REAR AXLE OIL TEMPERATURE GAUGE
W/O INSIDE/OUTSIDE TEMP GAUGE OPTION
GEAR SHIFT, DASH MOUNTED SHIFTER
GLASS - CAB WINDOW, TINTED WINDSHIELD, TINTED SIDE WINDOW AND TINTED REAR WINDOW (IF EQUIPPED) GRAB HANDLES, DIAG. INSIDE OF DRIVERS DOOR WITH ADTL MTD TO PASS SIDE "A" POST
GRILLE - HOOD AIR INTAKE, BRIGHT FINISH GRILLE
GRILLE, BRIGHT FINISH BARS W/BRIGHT FINISH SURROUND GRILL MOUNTED

CAB (H thru R)

HEADLINER, VINYL COVERED FOAM PADDED HEADLINER
HOOD LATCHES, BRIGHT FINISH
HORN - AIR, DELETE STANDARD AIR HORN
HORN - ELECTRIC, DUAL TONE (TWO HORNS)
IDENTIFICATION/CLEARANCE LIGHTS, (5) TRUCKLITE LED CHROME BULLET TYPE LAMPS
IN-DASH STORAGE, W/O UPPER STORAGE OPTION
INSTRUMENT CLUSTER DISPLAY, CO-PILOT DRIVER DISPLAY, ENHANCED 4.5" DIAGONAL LCD DISPLAY W/4-BUTTON
STALK CONTROL
INSTRUMENT PANEL, WOODGRAIN FINISH
INTERIOR TRIM (PEDIGREE - SLATE GRAY) Vinyl headliner, cloth/vinyl seat trim, 2 netted storage compartments and center CB radio mounting provisions in overhead console, rear panel with storage

pouch, signature polyurethane floor mat, brushed nickel instrument panel with chrome gauge bezels, diamond pattern fabric on doors, padded interior sun visors both sides, 2 spoke urethane grip brushed nickel spokes, brushed nickel Mack horn cap, adjustable tilt/telescoping steering column, hand crank lh/rh windows, 2 general overhead lights, 1 driver overhead light & 1 map non-glare overhead light, 2 12V power sources, 2 cup holders, 2 trash bag hooks, 2 coat hangers, rh storage compartment, seat belt retractors, rh door peep window, lighted door mounted map pocket lights.
CHASSIS KEYED AT RANDOM - 2 KEYS
MIRRORS - EXTERIOR, BULLDOG STYLIZED MIRRORS - LH & RH HEATED & MOTORIZED AND ILLUMINATED
W/INTEGRAL CONVEX MIRROR
MIRRORS - CONVEX TYPE, WITHOUT CONVEX TYPE
OVERHEAD CONSOLE, (2) STORAGE COMPARTMENTS AND NET RETAINERS W/CENTER MOUNTING FOR CB PROVISIONS
AM/FM PREMIUM STEREO, CD-PLAYER, MP3, WEATHERBAND, HANDSFREE INTERFACE, BLUETOOTH RADIO
ANTENNA, CAB MOUNTED BEHIND LH DOOR CB RADIO MOUNTING REINFORCEMENT IN HEADER CONSOLE

CAB (S thru Z)

SEAT - DRIVER, BOSTROM TALLADEGA 915 (MID-BACK) AIR SUSPENSION
SEAT - RIDER, MACK FIXED (MID-BACK) NON-SUSPENSION
SEAT ARM RESTS, INBOARD MOUNTED ARM REST, DRIVER'S & RIDER'S SEAT
SEAT COVERING, SEAT COVERING ALL CLOTH BLACK
LAP & SHOULDER W/FIXED D-RING FOR DRIVER & RIDER SEATS TO BE ORANGE IN COLOR
W/O ROOF VENT VENTILATION
STEERING COLUMN, ADJUSTABLE TILT TELESCOPE
STEERING WHEEL, TWO SPOKE URETHANE GRIP BRUSHED NICKEL SPOKES, BRUSHED CHROME MACK HORN CAP
STORAGE POUCH REAR
SUN VISOR, EXTERIOR, STAINLESS STEEL (UNPAINTED)
SUN VISOR - INTERIOR, BOTH SIDES (PADDED VINYL)
TURN SIGNAL SWITCH, SELF CANCELLING TURN SIGNALS
WINDOW CONTROLS, POWER WINDOW LIFT WITH ELECTRIC DOOR LOCK, LH & RH
WINDSHIELD, 2-PIECE WINDSHIELD
WINDSHIELD WASHER RESERVOIR, W/O WINDSHIELD WASHER OPTION WINDSHIELD WIPERS, 2 SPEED ELECTRIC MOTOR W/INTERMITTENT FEATURE

COMMUNICATIONS SYSTEMS

GUARDDOG CONNECT W/DIAGNOSTIC SERVICES

FRAME EQUIPMENT/FUEL TANKS

BUMPER - FRONT, EXT.-SWEPT BACK-STEEL CHANNEL 122.5"/3112 mm BBC (10"Hx92.6"W) W/BRIGHT FINISH
CROSSMEMBERS, BOC AND INTERMEDIATE CROSSMEMBERS, HD I-BEAM
I-BEAM REAR CROSSMEMBER
CROSSMEMBER (BEHIND REAR AXLE), ONE STEEL I-BEAM WITHOUT FIFTH WHEEL MOUNTING ANGLES
FRONT FRAME EXTENSION, 6" BOLT ON FRAME EXTENSION
TOWING DEVICE - FRONT, HOOKS
FUEL TANK - LH, 72 GALLON (276 L) ALUMINUM 26" DIAMETER
FUEL TANK - RH, OMIT RH STANDARD
FUEL TANKS - BRIGHT FINISH, W/O SPECIAL FINISH

FUEL TANK STANDARD FINISH STEPS AND STAINLESS STEEL BRIGHT FINISH STRAPS
8.7 GALLON (33 L) DEF TANK WITHOUT DEF TANK COVER
W/O FUEL LINE OPTION
W/O ISOLATED TANK(S)
RELOCATE FUEL TANK, W/O RELOCATED FUEL TANK(S)

FRONT AXLE/EQUIPMENT TIRES

FRONT AXLE, 18000# (8165kg) MACK FXL18 (WIDE PIVOT CENTER) STRAIGHT SPINDLE/UNITIZED BEARINGS
FRONT AXLE - TWIN STEER, WITH SINGLE STEER FRONT AXLE
TIRES BRAND/TYPE - FRONT, MICHELIN - TUBELESS RADIAL PLY, (2) 385/65R22.5 18 J XZY3 (ALL POSITION) (CHASSIS
WIDTH EXCEEDS 96")
WHEELS - FRONT, ALUMINUM DISC (2) 22.5x12.25 ALCOA LVL ONE, 10-HOLE HUB PILOTED (11 1/4"/286mm BC), 4.68"
INSET, #82462
WHEELS - POLISHED (FRONT), ALCOA POLISHED W/DURA-BRIGHT PROTECTION PROCESS
BRAKES - FRONT, BENDIX ES165-06D, 16.5" x 6" CAST SPIDER
BRAKE DRUMS - FRONT, CAST OUTBOARD MOUNTED DUST SHIELDS - FRONT BRAKE, FURNISH
HUBS - FRONT, FERROUS
FAG SCHAEFFLER, FRONT GREASE SEAL
SHOCK ABSORBERS, FRONT
SLACK ADJUSTERS - FRONT, HALDEX - AUTOMATIC
SPRINGS - FRONT, MACK TAPERLEAF HD 18000# (8165kg) GROUND LOAD RATING
STEERING, SHEPPARD SD110
PROTECTIVE NYLON SPACER BETWEEN DISCS WHEEL TO DRUM

REAR AXLE/EQUIPMENT/TIRES/RATIOS

REAR AXLE/SUSPENSION, 46000# (20866kg) MACK S440-46 (268 1904) FAB STEEL HOUSING – RECERTIFICATION, S440 MACK AL-461 AIR 46000# CAPACITY
4S/4M SYSTEM REAR WHEEL END SENSORS W/O WIDE TRACK AXLE OPTION
TIRES BRAND/TYPE - REAR, MICHELIN - TUBELESS RADIAL PLY, (8) 11R24.5 14 G XDN2 (TRACTION)
CARRIER/RATIO - REAR AXLE, CRDP150/151, 4.80 RATIO
WHEELS - REAR, ALUMINUM DISC(8) 24.5x8.25 (210 mm) ALCOA LVL ONE 10-HOLE HUB PILOTED (11 1/4" 286mm BOLT
CIRCLE)(6.60" OUTSET, #98363)
WHEELS - POLISHED (REAR), (4) ALCOA POLISHED W/DURA-BRIGHT PROTECTION PROCESS OUTBOARD OF
DUALWHEELS - CONCAVE SIDE
BRAKES - REAR, BENDIX ES165-07D, 16.5x7 CAST SPIDER BRAKE DRUMS - REAR, CAST OUTBOARD MOUNTED DUST
SHIELDS - REAR BRAKE, FURNISH
HUBS - REAR, CONMET IRON PRESET REAR HUB W/INTEGRATED SPINDLE NUT PREMIUM HUB OIL REAR SEAL
POWER DIVIDER LOCKOUT W/WARNING LIGHT AND BUZZER (INCLUDES IN CAB MANUAL AIR VALVE)
SHOCK ABSORBERS - (4), OUTBOARD MTD ON FRONT-REAR AXLES INBOARD MTD ON REAR-REAR AXLES W/O
SHOCK INSULATORS
SLACK ADJUSTERS - REAR, HALDEX - AUTOMATIC

SUSPENSION - AXLE SPACING, 52" AXLE SPACING (BOGIE WHEELBASE)
SUSPENSION - HEIGHT CONTROL KIT, AIR SUSPENSION HEIGHT CONTROL KIT (W/DUMP VALVE AND CONTROL)
AIR SUSPENSION DUMP WARNING, AIR SUSPENSION DUMP, SPEED LIMITED, WARNING INDICATOR & BUZZER SPRING BRAKE CHAMBERS - VENDOR, HALDEX "LIFE SEAL" TYPE
REAR SPRING BRAKE CHAMBERS 30/30 TYPE
SYNTHETIC LUBRICANT - REAR AXLE, FACTORY OPTION LUBE REAR AXLE TRANSVERSE TORQUE RODS (BOTH
AXLES)
FURNISH PROTECTIVE NYLON SPACER BETWEEN DISCS & WHEEL TO DRUM

FRAME/WHEELBASE/PLATFORM

WHEELBASE, 267" (6770 mm) WB 179" CA (4547 mm)
PLATFORM, 281" LP (7127 mm) 102" AF (2580 mm) USED WITH 267" WB
FRAME RAILS, 11.811" x 3.54" x .37" (300 x 90 x 9.5mm) STEEL Section Modulus: 29.8 cu in/RBM 3,580,000 in lbs. per rail For
Full IC reinforcement
FRAME REINFORCEMENT - INSIDE, 5MM STEEL CHANNEL USED W/274"-303" LP

AIR/BRAKE

AIR DRYER, MERITOR/WABCO HEATED AIR DRYER, 1200 W/COALESCING OIL FILTER UNDER BATTERY BOX,
REMAINING BETWEEN FRAME RAILS
AIR RESERVOIRS, ALUMINUM, POLISHED
ANTI-LOCK BRAKE SYSTEM, BENDIX WITHOUT TRACTION CONTROL
AIR CONTROL VALVES - VENDOR, BENDIX SWITCHES AND VALVES WHERE POSSIBLE
BRAKE CONTROL VALVE SYSTEM, SINGLE VALVE SYSTEM
DRAIN VALVES, MANUAL DRAIN VALVES, WITH LANYARD ON SUPPLY TANK ONLY
W/O HAND CONTROL VALVE
INCREASED AIR CAPACITY, W/O INCREASED AIR RESERVOIR CAPACITY
W/O TRAILER ACCESS PACKAGE

TRAILER CONNECTIONS

TRAILER AIR CONNECTIONS, OMIT TRAILER AIR BRAKE CONNECTIONS WITHOUT HOSE TENDER
W/O TRAILER AIR HOSES
W/O TRAILER ELECTRICAL CABLE
TRAILER ELECTRICAL RECEPTACLE, WITHOUT TRAILER ELECTRICAL RECEPTACLE
OMIT TRAILER CONNECTORS HOLDER

ELECTRICAL

BACK-UP ALARM, W/O BACK-UP ALARM
BATTERY BOX COVERS, POLISHED ALUMINUM
BATTERY BOX - MOUNTING, (1) BATTERY BOX LEFT HAND RAIL
W/O OPTIONAL DASH MTD. LIGHT
CHASSIS & POWER HARNESS WITH HEAVY DUTY CASING "BODY LINK" III W/CAB PASS-THRU
REAR LIGHTING, FURNISH REAR LIGHTING

PAINT

PAINT - CAB EXTERIOR, SINGLE COLOR, MACK WHITE (HIGH GLOSS)
PAINT - CAB, URETHANE CLEAR COAT
PAINT - CHASSIS RUNNING GEAR, MACK BLACK (URETHANE)
PAINT - FRONT SPOKE WHEELS, WITHOUT OPTIONAL SPOKE WHEEL PAINT

PAINT PROCESS CODES

W/O PAINT FOR BUMPER (5ZB-Z1X)
CHASSIS RUNNING GEAR - STD COLOR (MACK BLACK) (6AB-Z1X)
W/O PAINT FOR FUEL TANK (7HB-Z1X)
W/O CUSTOM PAINT FOR HUB&DRUM/SPOKES (5YB-Z1X) W/O CUSTOM PAINTED FRONT/REAR RIM/WHEEL (6BB-Z1X)

PTO/SPECIALTY/ADDITIONAL EQUIPMENT

PTO - REAR ENGINE (REPTO), WITHOUT REAR ENGINE POWER TAKE OFF TORQUE CONVERTER TC531
W/O SPECIAL DECALS
RELOCATE TRANSMISSION DIPSTICK UNDER HOOD
SEATBELT WARNING SYSTEM MOVE TO MOD CENTER

DEALER INFORMATION

ENGINE WARRANTY, 2YR/250,000 MILES ENGINE WARRANTY US10
PILOT INSPECTION, WITHOUT PILOT INSPECTION
NEW TRUCK PRE-DELIVERY
SEATBELT SENSORS
EMBER SEPERATORS
OCCUPANT SENSORS
STANDARD SHIPPING INSTRUCTIONS

PERFORMANCE/GRAPHICS/TECH DATA

OVERWIDTH STATEMENT, OVERALL WIDTH EXCEEDS 96"**S**

OFT PRODUCTS/BULLDOG PROTECTION

W/O GUARDDOG CONNECT
NO PARTNERED SERVICES PROVIDED

****** OEM INSTALLED CHASSIS OPTIONS ******

RELOCATE AIR TANKS ON MACK CHASSIS

The Mack air reservoir tanks will be relocated as necessary.

PAINTED FENDER FLARES

The entire fender flare and its assembly will be painted job color.

EMBER SEPARATOR

An air inlet will be equipped with a stainless mesh screen for separating water and burning embers from the air intake system such that particulate matter larger than 0.039" (1.0 mm) in diameter cannot reach the air filter element.

IGNITION KEY ATTACHED WITH CHAIN

The ignition key will be attached to the cab dash with a chain.

SEAT BELT CLARIFICATION

Red seat belts will be provided if available from the chassis manufacturer.

BUMPER

The front bumper will be extended as provided by the chassis manufacturer.

REPLACE CAB STEPS

The chassis OEM cab steps will be replaced with formed, NFPA compliant skid resistant aluminum treadplate steps that will extend the full length of the cab on each side.

MUD FLAPS

Black rubber mud flaps will be provided on the front fenders.

FUEL TANK TREAD PLATE

The step type fuel tank will be overlaid with polished aluminum tread plate. This will include the top, front and both ends. Step areas will be provided for access to the cab. Step areas will be fabricated from Alcoa "No-Slip" tread plate.

BATTERY BOX TREAD PLATE

The battery box will be overlaid with polished aluminum tread plate. The cover of this box will be easily removable for inspection of the batteries.

CENTER CONSOLE

A center console fabricated from 1/8" aluminum will be furnished and will be located between the driver and officer's seats.

The forward area of the console will have a mounting surface for emergency lighting switch panels and/or electronic siren control boxes within reach of the driver or officer. In addition, the console will be equipped with two (2) map/notebook storage pockets at the rear of the console.
The console will be finished with a textured gray paint to match the interior color of the cab.

Console dimensions are based on current International cab models. Other specified commercial cabs (or changes to the International cab) may result in varied dimensions.

RADIO INSTALLATION

The customer furnished radios will consist of three (3) radios and three (3) speakers mounted in the cab center console. Two of the radios will have remote heads and speakers that will be mounted on the pump panel. The remote heads will be mounted in the radio box, and the speakers will be mounted behind the punched grills.

Radio models:

Kenwood TK-690H 42-50, 110W radio, with dual heads, 1 at pump panel and one in cab (two speakers)

Kenwood TK-790H 150-174 110W radio with dual heads, 1 at pump panel and one in cab (two speakers)

Kenwood TK-7360H 150-174 MHz 50W radio installed in cab (one speaker)

ANTENNA INSTALLATION

One (1) antenna mounting base(s) model #MATM with 17' of coaxial cable will be provided and installed on the cab roof. The attached antenna wire(s) will be run to the center console.

The Fire Department is responsible to have the correct antenna whip installed once the apparatus is delivered.

LICENSE PLATE BRACKET

A chrome plated license plate bracket will be provided on the front bumper of the apparatus.

LIGHTED BUMPER GUIDES

A pair of chrome plated, LED bumper guides will be provided and will be mounted on the outboard corners of the commercial chassis front bumper. The lights will be wired into the parking light circuit of the chassis.

TIRE PRESSURE MONITORING DEVICES

Each tire will be equipped with an LED tire alert pressure management system (Vecsafe equal) that will monitor tire pressure. A chrome plated brass sensor will be provided on the valve stem of each tire.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the valve stem will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start blinking.

INSTALL TRANSIT ANTENNA

Two transit style VHF high band antenna shall be mounted on the apparatus roof. the attached antenna wires shall be run to the fabricated center console.

Final positions must be approved at pre construction meeting

SEAT BELT CUSHION SENSORS AND BELT SENSORS

The apparatus will be equipped with a Class 1 seat belt warning system. The system will consist of a Seat Belt module, dash mounted Icon style display and an audible alarm.

Seat belt and seat cushion sensors will be provided on the two (2) specified seating positions.

VEHICLE DATA RECORDER

A Class 1 Vehicle Data Recorder (VDR) system will be provided. The system will include an NFPA compliant "Black Box" with reporting software that will be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities will include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date & time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports

The VDR data will be downloadable by USB cable to a computer using either Microsoft or Apple operating systems.

PUMP SHIFT CONTROL

The pump shift control and pump engaged indicator light will be mounted in the driver's lower left panel. This control will be equipped with a mechanical type lock to prevent inadvertent activation or de-activation. The lever positions and indicator light shall be clearly marked.

**** CHASSIS/BODY ELECTRICAL & ACCESSORIES ****

COMMERCIAL CHASSIS ELECTRICAL SYSTEM

The commercial chassis electrical system will be provided as furnished by the original manufacturer. A customized interface will be provided and designed, so as not to disturb any of the required chassis functions. The necessary interfaces will only be provided in areas where load management is allowed or with accessory components provided on the chassis.

12 VOLT ELECTRICAL SYSTEM TESTING

The apparatus low voltage electrical system will be tested and certified by the manufacturer. The certification will be provided with the apparatus. All tests will be performed with air temperature between 0°F and 100°F.

The following three (3) tests will be performed in order. Before each test, the batteries will be fully charged.

TEST #1-RESERVE CAPACITY TEST

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

TEST #2-ALTERNATOR PERFORMANCE TEST AT IDLE

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

TEST #3-ALTERNATOR PERFORMANCE TEST AT FULL LOAD

The total continuous electrical load will be activated with the engine running up to the engine manufacturers governed speed. The test duration will be a minimum of 2 hours. Activation of the load management system will be permitted during this test. However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of less than 11.7 volts DC for a 12 volt system, for more than 120 seconds, will be considered a test failure.

LOW VOLTAGE ALARM TEST

Following completion of the preceding tests, the engine will be shut off. The total continuous electrical load will be activated and will continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage will be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts will be considered a test failure. The battery system will then be able to restart the engine.

At time of delivery, documentation will be provided with the following information:

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

ELECTRICAL MANAGEMENT SYSTEM

A Class 1 ES-Key Electrical Management System will be utilized on the chassis for all functions applicable. The system will consist of the following components:

The High Density I/O Node (Super Node) will have the ability to perform the following functions:

- A modem with a RS232 computer interface and standard telephone jack used to not only program the multiplex system but also serve as a factory direct gateway into the vehicle from any Class 1 multiplex authorized service facility.

- A Universal System Manager (USM), which acts as the main controlling component of the multiplexing system will be provided and factory programmed to DOT, NFPA, SAE, the manufacturer and Stillwater Township specifications. The programming will be done by the manufacturer's engineering department. The ES-Key system installation will comply with SAE J 551 requirements regarding Electromagnetic and Radio Frequency interference (EMI, RFI), as well as utilize components and wiring practices that insure the system is protected against corrosion, excessive temperatures, water, excessive physical, and vibration damage by any equipment installed on the vehicle at the time of delivery.

- A series of Multiplexing Input/Output jacks will be provided. The Input/Output jacks will permit the multiplexing system to reduce the amount of wiring and components used as compared to non-multiplexed apparatus. These jacks will vary in I/O configuration and will possess individual output internal circuit protection.

The System will also consist of a Smart Programmable Switch (SPS) panel that will be installed and allow the operator to control the programmed functions of each individual switch.

Diagnostic software will be provided to download data from the on board ES-KEY system. This software will have the ability to view system input/output (I/O) information, and include a connection from a computer to the vehicle.

CHASSIS DIAGNOSTICS SYSTEM

Diagnostic ports will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic system will include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)

BATTERY DISCONNECT SWITCH

The chassis batteries will be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty master disconnect switch. The master disconnect switch will be located within easy access of the driver upon entering or exiting the cab.

120 VOLT SHORELINE CONNECTION - "SUPER" AUTO EJECT

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect will be provided for the on board, 110 volt battery charging systems.

The disconnect will be equipped with a NEMA 5-20 P male receptacle, which will automatically eject the shoreline when the vehicle starter is energized. The mating connector will be included with the auto eject and will be provided as loose equipment. A label will be provided indicating voltage and amperage ratings.

SHORELINE POWER INLET PLATE

A shoreline power receptacle information plate will be permanently affixed at or near the power inlet. The plate will indicate the following:

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

The Kussmaul auto-eject connection will be equipped with a Red weatherproof cover.

The shoreline receptacle will be located in the driver's cab step well.

BATTERY CHARGER / AIR COMPRESSOR SYSTEM

A Kussmaul model #091-187-12-REMOTE, "Auto Charge 1200" high output, fully automatic battery charger will be provided for maintaining the vehicle battery system. Unique electronic sensing circuits sense the true battery voltage while eliminating the need for external sense wires. Output current will be 40 amperes @ 12 volt DC.

A Kussmaul 091-9HP air compressor will maintain the air pressure in the chassis air brake system while the vehicle is not in use. The air compressor will have a rated input at 120 volts AC @ 3.5 amps and a maximum of 125 psi.

A LED bar graph display will be located near the shoreline connection to monitor the battery status.

A Kussmaul # 091-9-090 Auto Drain ACHP will be installed to protect the Auto Pump from built up moisture.

"DO NOT MOVE APPARATUS" WARNING LIGHT WITH AUDIBLE ALARM

A 1" round, red flashing warning light with an integral audible alarm, will be functionally located in the cab to signal when an unsafe condition is present such as an open cab door or body compartment door, an extended ladder rack, a deployed stabilizer, an extended light tower or any other device which is opened, extended or deployed which may cause damage to the apparatus if it is moved.

This light will be activated through the parking brake switch to signal when the parking brake is released. This light will be labeled "DO NOT MOVE TRUCK".

****** 12V POWER/ USB CHARGING/ POWER - GROUND CIRCUITS ******

12 VOLT ACCESSORY CIRCUIT - CENTER CONSOLE

One (1) dedicated circuit; 12 volt, 40 amp, power and ground on 3/8 stud and fused at battery will be provided IN THE CENTER CONSOLE.

An additional 12 volt, 20 amp, power stud will be installed next to the studs above and will be switched with the ignition circuit.

The circuit will be for future installation of radios or accessories.

****** EXTERIOR LIGHTING ******

DOT MARKER LIGHTS AND REFLECTORS

Cab marker lights and signaling devices will be as provided on the commercial chassis cab from the original chassis manufacturer. FMVSS reflectors will be also be provided as required.

Truck-Lite Model # 18 red LED marker lights with integral reflectors will be provided at the lower side rear, one (1) each side.

Truck-Lite # 60115Y yellow LED side marker and turn lights will be provided on the apparatus lower side, forward of rear axle, one (1) each side if the apparatus is 30' long or longer.

Truck-Lite Model #19 red LED clearance lights will be provided on the apparatus rear upper, one (1) each side at the outermost practical location.

Truck-Lite Model # 33740R LED 3-lamp identification bar will be provided on the apparatus rear center. The lights will be red in color.

Truck-Lite # 98034Y yellow reflectors will be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30' long or longer.

Truck-Lite # 98034R red reflectors will be provided on the apparatus rear, one (1) each side at the outermost practical location.

LED LICENSE PLATE LIGHT - REAR

One (1) Tecniq model #L10 LED license plate light will be provided above the mounting position of the license plate. The light will be clear in color and will have a chrome finish.

TAIL, STOP, TURN AND BACK-UP LIGHTS

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED red combination tail and stop lights, will be mounted one each side at the rear of the body.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED amber arrow turn signal lights, will be mounted one each side, on a vertical plane with the tail/stop lights.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED white back-up lights, will be mounted, one each side on a vertical plane with the turn/tail/stop signals. These lights will activate when the transmission is placed in reverse gear.

Two (2) Whelen M6FCV4 mounting flanges, installed one (1) on each side, will be provided to mount the lights described above in one common mounting flange. The fourth opening will be for the lower rear warning lights.

The lights will be mounted in order, from top to bottom, as described above.

BODY STEP LIGHTS

Polished stainless steel, TecNiq Eon 3-LED horizontal surface mounted body step lights will be provided and controlled with marker light actuation. Step lights will be located to properly illuminate all body access steps and walkway areas and will include a mounting gasket to provide a watertight seal.

DUNNAGE AREA LIGHTING

Two (2) stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights will be provided in the dunnage area to provide adequate illumination of this area.

****** SCENE LIGHTS – BODY ******

SCENE LIGHTS - REAR OF TANK

Two (2) Whelen M9LZC super LED scene lights will be provided, one on each side of the rear TANK panel in a chrome plated flange. Each light will draw 6 amps and generate 6,500 lumens. The scene lights will be wired through the load management system.

The rear scene lights will be mounted on individual polished stainless steel brackets on the driver's and officer's side of the rear of the tank. The rear scene lights will be mounted on the rear of the bracket. the rear side scene lights on the sides of the bracket, and the Zone C- Upper warning light on the top of the bracket. The bracket will NOT extend across the entire rear of the vehicle

SCENE LIGHTS - DRIVER SIDE OF TANK

Two (2) Whelen M9LZC super LED scene lights will be provided. The scene lights will be installed one rearward and one forward on the driver side of the TANK in a chrome plated flange. Each light will draw 6 amps and generate 6,500 lumens. The scene lights will be wired through the load management system.

The driver's side scene lights will be mounted on individual polished stainless steel brackets.

SCENE LIGHTS - OFFICER SIDE OF TANK

Two (2) Whelen M9LZC super LED scene lights will be provided. The scene lights will be installed one rearward and one forward on the officer side of the TANK in a chrome plated flange. Each light will draw 6 amps and generate 6,500 lumens. The scene lights will be wired through the load management system.

The officer side scene lights will be mounted on individual polished stainless steel brackets.

REAR OF BODY LIGHT SWITCHING - CAB

A switch will be provided in the cab warning light switch console to turn the rear of body lights on and off.

DRIVER SIDE OF BODY LIGHT SWITCHING - CAB

A switch will be provided in the cab warning light switch console to turn the driver side of body lights on and off.

OFFICER SIDE OF BODY LIGHT SWITCHING - CAB

A switch will be provided in the cab warning light switch console to turn the officer side of body lights on and off.

REAR SCENE LIGHTS - ADDITIONAL ACTIVATION

In addition to the cab mounted switch for the rear scene lights, the rear scene lights will illuminate when the transmission is placed in reverse gear and the apparatus is operating as an emergency vehicle (Primary Warning switch on).

****** GROUND LIGHTS ******

GROUND LIGHTS - CAB

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, will be provided under each side cab door entrance step, two (2) total. The ground lights will turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

Each light will illuminate an area at a minimum 30" outward from the edge of the vehicle.

GROUND LIGHTS - FRONT BODY

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, will be provided under each front body corner, two (2) total. The ground lights will be activated by a master ground light switch in the cab and will be wired through the load management system.

GROUND LIGHTS - REAR

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, will be provided under each rear body corner, two (2) total. The ground lights will be activated by a master ground light switch in the cab and will be wired through the load management system.

GROUND LIGHT SWITCHING

The cab and body ground lights will activate by engaging the parking brake.

****** BODY ELECTRICAL SYSTEM ******

12 VOLT BODY ELECTRICAL SYSTEM

All electrical lines in the body will be protected by automatic circuit breakers, conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical controls will be located in a central area near the circuit breakers.

All lines will be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram. A complete wiring diagram will be supplied with the apparatus.

Wiring will be carefully protected from weather elements and snagging. Heavy duty loom will be used for the entire length. Grommets will be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area will be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment will be installed to conform to the latest federal standards as outlined in NFPA 1901.

BODY ELECTRICAL JUNCTION COMPARTMENT

A weather resistant electric junction compartment will be provided within the body or pump enclosure, depending on vehicle configuration. This compartment will provide an easily accessible enclosure to house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this compartment will not decrease the storage capacity area of the compartment or area in which it is located. A removable panel will be provided for access to this compartment.

PUMP ENCLOSURE WORK LIGHTS

Two (2) Grote model #61171 LED lights will be provided inside the pump enclosure providing a minimum of 20 candlepower illumination. Each light will have their own independent switch incorporated into the light head.

ENGINE COMPARTMENT WORK LIGHTS

Two (2) Grote model #61171 LED lights will be provided inside the engine enclosure that will provide a minimum of 20 candlepower illumination. Each light will have their own independent switch incorporated into the light head.

****** COMPARTMENT LIGHTS - ELLIPTICAL TANKER ******

ON SCENE SOLUTIONS ACCESS SERIES COMPARTMENT LIGHTS - LED

Each individual, equipment storage compartment will be equipped with the On Scene Solutions Access Series LED light fixture mounted one each side of the forward (and rear) vertical door frame.

The lights will come with a five (5) year warranty.

****** COMMERCIAL ELLIPTICAL TANKER NFPA WARNING LIGHT PACKAGE ******

NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

The following warning light package will include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard. The lighting as specified will meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

LIGHT PACKAGE ACTUATION CONTROLS

The entire warning light package will be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package will engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system will be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

WARNING LIGHT FLASH PATTERN

All of the perimeter warning lights will be set to an NFPA compliant flash pattern by the apparatus manufacturer.

UPPER LEVEL LIGHTING - WHELEN

NFPA ZONE A, UPPER

A Whelen #FN55VLED "Edge Freedom", 55" LED cab roof warning light bar will be furnished and rigidly mounted on top of the cab roof.

The light bar will be equipped with the following:

- Clear Lenses
- Four Corner Red Linear LED's
- Two Red Forward Facing Linear LED's
- Two White Forward Facing Linear LED's

If equipped, the forward facing white lights will be automatically disabled for the "Blocking Right of Way" mode.

The Freedom light bar will be equipped with one (1) pair(s) of # FLDRR red LED warning lights.

The Freedom light bar will be equipped with one (1) pair(s) of # FLDBB blue LED warning lights.

NFPA ZONE C, UPPER

Two (2) Whelen MCFLED2R "Micro Freedom", mini warning light bars will be furnished and rigidly mounted one (1) each side at the rear of the body.

Each light bar will have clear lenses.

NFPA ZONES B & D REAR, UPPER

The lighting requirement for this area is covered by the lights noted in Zone "C" - Upper.

NFPA ZONES B & D FRONT, UPPER

The lighting requirement for this area is covered by the lights noted in Zone "A" - Upper.

LOWER LEVEL LIGHTING - WHELEN

NFPA ZONE A, LOWER

Two (2) Whelen M7* super LED light heads will be provided and installed one (1) each side.

Each light head will be equipped with red LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

The lower zone A warning lights will be mounted in the commercial chassis grille.

NFPA ZONE C, LOWER

Two (2) Whelen M6* super LED light heads will be provided and installed; one (1) each side directly below the DOT stop, tail, turn and backup lights.

Each light head will be equipped with red LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

NFPA ZONES B & D FRONT, LOWER

Two (2) Whelen M6* super LED light heads will be provided and installed one (1) each side.

Each light head will be equipped with red LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

The lower zone B & D warning lights will be mounted on the sides of the commercial chassis hood.

NFPA ZONES B & D MIDSHIP, LOWER

Two (2) Whelen M6* super LED light heads will be provided and installed one (1) each side.

Each light head will be equipped with BLUE LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

NFPA ZONES B & D REAR, LOWER

Two (2) Whelen M6* super LED light heads will be provided and installed one (1) each side.

Each light head will be equipped with red LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

WARNING LIGHT SYSTEM CERTIFICATION

The warning light system(s) specified above will not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

The warning light system(s) will be certified by the light system manufacturer(s), to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications. The NFPA required "Certificate of Compliance" will be provided with the completed apparatus.

****** OPTIONAL WARNING LIGHTS ******

AUXILIARY WARNING LIGHTS

Two (2) surface mounted Whelen M6* super LED light heads will be furnished and mounted forward of the rear axle.

Each light head will be equipped with red LED's and a CLEAR lens.

The lights will be installed with a chrome plated mounting flange.

TRAFFIC ADVISER WARNING LIGHT

One (1) Whelen super LED "Traffic Advisor", model TANF65, 34" rear directional light will be installed on the vertical rear surface of the body. The light will be equipped with six (6) super LED modules. The directional light will be activated by a control module. The control module will be conveniently located near the driver's position. The rear directional light will be wired through the load management system of the unit.

****** AUDIBLE WARNING EQUIPMENT ******

STEERING WHEEL 3-WAY BUTTON

A three (3) position rocker switch will be installed on the cab dash to activate from the steering wheel horn button one of the following: DOT horn, air horn, or electronic/mechanical siren.

BACK-UP ALARM

A Code 3, model # CA278, 87dBA back-up alarm, will be provided and installed at the rear of the apparatus under the tailboard. The back-up alarm will activate automatically when the transmission is placed in reverse gear and the ignition is "on".

AIR HORNS

Two (2) chrome plated air horns will be at the front of the vehicle. The air horns will be mounted in full compliance with NFPA-1901. The supply lines will be dual 1/4" lines with equal distance from each horn.

Both air horns will be installed under the front bumper in a polished stainless steel trim plate.

The air horns will be controlled by dual ceiling mounted lanyard cables, located in the center of the cab.

ELECTRONIC SIREN

One (1) Code 3 Model #3672 V-Con electronic siren will be provided featuring: electronic air horn, hyper yelp siren tones. A hardwired microphone will provided for the public address feature.

The electronic siren and speaker will meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

One (1) Code 3, model # FM100C chrome plated siren speaker will be provided, recessed in the front bumper and wired to the electronic siren.

FEDERAL Q2B MECHANICAL SIREN

One (1) Federal Model #Q2B mechanical siren will be provided to provide audible warning.

The Q2B siren will be semi-recessed into the bumper on the driver's side. The siren will be recessed so the front grille portion of the siren is exposed and protruding beyond the bumper.

A push button switch will be provided for the officer in the center console. A siren brake button will be provided near the driver's position.

A rocker switch will be installed in the dash panel to allow control of either the air horn or the siren from the steering wheel horn button for the driver.

****** PUMP AND PLUMBING ******

PUMP

- **HALE DSD-125**
- **1250 G.P.M.**
- **SINGLE STAGE**

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

- 100% of rated capacity at 150 P.S.I. net pump pressure
- 100% of rated capacity at 165 P.S.I. net pump pressure
- 70% of rated capacity at 200 P.S.I. net pump pressure
- 50% of rated capacity at 250 P.S.I. net pump pressure.

PUMP ASSEMBLY

The pump will be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1250 gallons per minute (U.S. GPM), NFPA-1901 rated performance.

PUMP CONSTRUCTION

The entire pump will be manufactured and tested at the pump manufacturer's factory.

The pump will be driven by a drive line from the truck transmission. The engine will provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, will be hydrostatically tested to a pressure of 600 PSI (41.3 BAR). The pump will be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Standard 1901. Pump will be free from objectionable pulsation and vibration.

The pump body and related parts will be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 BAR). All moving parts in contact with water will be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable.

Pump body will be vertically split, on a single plane, for easy removal of impeller assembly, including clearance rings.

PUMP SHAFT

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings will be heavy-duty, deep groove ball bearings in the gearbox and they will be splash lubricated. The pump shaft will be heat-treated, electric furnace, corrosion resistant, stainless steel. Pump shaft must be sealed with double lip oil seal to keep road dirt and water out of gearbox.

PUMP IMPELLER

Pump impeller will be hard, fine grain bronze of the mixed flow design; accurately machined, hand-ground and individually balanced. The vanes of the impeller intake eye will be hand-ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings will be bronze, easily renewable without replacing impellers or pump volute body.

MECHANICAL SHAFT SEAL

The midship pump will be equipped with a high quality, spring loaded, self-adjusting mechanical seal capable of providing a positive seal to atmosphere under all pumping conditions. This positive seal to atmosphere must be achievable under vacuum conditions up to 26 Hg (draft) or positive suction pressures up to 250 PSI.

The mechanical seal assembly will be 2 inches in diameter and consists of a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with a Teflon backup seal provided.

Only one (1) mechanical seal will be required, located on the suction side of the pump and be designed to be compatible with a one piece pump shaft. A continuous cooling flow of water from the pump will be directed through the seal chamber when the pump is in operation.

GEARBOX

The drive unit will be completely assembled and tested at the pump manufacturer's factory.

The drive unit will be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine in both road and pump operating conditions. The drive unit will be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts will be of heat treated chrome nickel steel and at least 2-3/4 inches in diameter on both the input and output drive shafts. They will withstand the full torque of the engine in both road and pump operating conditions.

All gears, drive and pump will be of the highest quality electric furnace chrome nickel steel. Bores will be ground to size and teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design will be provided to eliminate all possible end thrust.

PUMP RATIO

The pump ratio will be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

The manufacturer will supply at time of delivery copies of the pump manufacturer's certification of hydrostatic testing, the engine manufacturer's current certified brake horsepower curve.

PUMP SHIFT CONTROL

The drive unit will be equipped with a power shift. The shifting mechanism will be a heat treated, hard anodized aluminum power cylinder with stainless steel shaft. An air operated in-cab control for rapid shift will be provided that locks in road or pump, with a neutral position for use when manual override is required.

MAIN PUMP - PUMP SHIFT INDICATOR LIGHTS

For automatic transmissions, three (3) green warning lights will be provided to indicate to the operator(s) when the pump has completed the shift for Road to Pump position. Two (2) green lights to be located in the truck driving compartment and one (1) green light on pump operator's panel adjacent to the throttle control. For manual transmissions, one (1) green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

TRANSMISSION LOCK

The automatic transmission furnished in the chassis will have a lock-up assembly which brings the transmission to direct drive and prevents the transmission from shifting gears while in the pumping mode.

BRAKING SYSTEM

A positive braking system will be provided to prevent vehicle movement during pumping operations. The air brakes furnished must satisfy this requirement.

MAIN PUMP MOUNTS

Extra heavy duty pump mounting brackets will be furnished. These will be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the drive line joints will be the same on each end of the drive shaft. This will assure full capacity performance with a minimum of vibration. Mounting hardware will utilize Grade 8 bolts.

Pumps which are not mounted directly to the frame will not be considered. Under no circumstance shall the pump function as a frame cross member.

PUMP MANIFOLDS

A custom made suction and discharge manifold will be constructed from stainless steel and/or flexible tubing. The manifold will be designed to provide maximum efficiency for the suction inlets and the discharges.

**** PRESSURE CONTROL & ACCESSORIES ****

PUMP PRESSURE CONTROL SYSTEM

The apparatus will be equipped with a Fire Research PumpBoss model# PBA400 pressure governor and monitoring display kit. The kit will include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case will be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 1/2" deep. The control knob will be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It will not extend more than 1 3/4" from the front of the control module. Inputs for monitored information will be from a J1939 databus or independent sensors. Outputs for engine control will be on the J1939 databus or engine specific wiring. Inputs to the control module from the pump discharge and intake pressure sensors will be electrical.

The following continuous displays will be provided:

- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Check engine and stop engine warning LEDs
- Oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
- Transmission Temperature: shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display
- Pressure and RPM operating mode LEDs
- Pressure / RPM setting; shown on a dot matrix message display
- Throttle ready LED.

The dot-matrix message display will show diagnostic and warning messages as they occur. It will show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity will be automatically adjusted for day and night time operation.

The program will store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It will monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only)

The program features will be accessed via push buttons located on the front of the control module. There will be a USB port located at the rear of the control module to upload future firmware enhancements.

The governor will operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation will occur when switching between modes. A throttle ready LED will light when the interlock signal is recognized. The governor will start in pressure mode and set the engine RPM to idle.

In pressure mode the governor will automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor will maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor will limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features will include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor and monitoring pressure display will be programmed to interface with a specific engine.

ELKHART INTAKE RELIEF VALVE

An Elkhart Model 40 intake relief valve system will be plumbed on the suction side of the pump to comply fully with NFPA-1901 requirements. Excess pressures will be plumbed to discharge water under the pump enclosure away from the pump operator.

PUMP CERTIFICATION

The pump will be third party performance tested to meet the requirements of NFPA-1901. To ensure top quality and integrity, the test company will be Underwriters Laboratories (UL).

**** HALE, PUMP PRIMING PUMP AND CONTROLS ****

TRIDENT "AUTOMATIC" AIR PRIMING SYSTEM

A Trident automatic air operated priming system will be installed. The unit will be brass and stainless steel construction, no aluminum will be used. The priming system will be fully compliant of applicable NFPA standards for vertical lift. Noise level during operation of the primer will not exceed 75Db.

The 12 volt primer control will be an "automatic" type, with a pump panel three-way switch to operate an air solenoid valve.

Automatic Priming switch will have three positions:

- "Prime"- the lower position will be a momentary "push to prime". The "Prime" position also allows the operator to "ramp" test the primer without the fire pump being engaged.
- "Off" - center position.
- "Auto-Prime" - in the upper position, a "green" LED pilot light will be illuminated when the switch is in the auto-prime position. Auto-Prime will operate automatically when the pump pressure drops 20 PSIG. The primer will shut "off" automatically when the pump pressure is re-established and exceeds 20 PSIG.

This priming system will be capable of priming at up to four(4) locations.

FRONT SUCTION REMOTE PRIMING VALVE

An additional primer control valve will be furnished to prime the front suction. The Trident Emergency products RPV (remote priming valve) will activate using the same air that powers the AirPrime™ system when the coinciding panel valve is depressed.

****** HALE, DRAINS & ACCESSORIES ******

MASTER DRAIN VALVE

A rotary type, 12 port master drain valve will be provided and controlled at the lower portion of the side pump panel. The valve will be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water will be drained below the apparatus body and away from the pump operator.

INDIVIDUAL BLEEDERS AND DRAINS

All lines will drain through the master drain valve or will be equipped with individual drain valves, easily accessible and labeled.

One (1) individual "TRIDENT" quarter turn drain valve will be furnished for each 1-1/2" or larger discharge port and each 2-1/2" gated auxiliary suction.

Drain/bleeder valves will be located at the bottom of the side pump module panels.

All drains and bleeders will discharge below the running boards.

SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure will 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.

HALE ANODE BLOCKS - ALLOY - 2 TOTAL

Two (2) Hale Alloy Anode blocks will be provided and located one (1) on the suction side and one (1) on the discharge side of the pump to protect the pump from corrosion.

The Anodes will be painted Safety Yellow for identification purposes.

THERMAL RELIEF VALVE

A Hale Model TRV120 Thermal Relief Valve will be provided on the pump. If water temperature in the pump exceeds 120 degrees Fahrenheit, the thermal relief valve will automatically open and discharge pump water to the atmosphere, through a 3/8" discharge line, routed below the pump module. The thermal relief valve will automatically close when the water temperature is lowered.

An indicator light will be provided on the operator's panel to illuminate when the thermal relief valve is activated.

An audible alarm will be provided on the operator's panel to alert the operator when the thermal relief valve is activated.

PUMP MODULE

The pump module will be a self-supported structure mounted independently from the body and chassis cab. The design must allow normal frame deflection without imposing stress on the pump module structure or side running boards. The pump module will be securely mounted to the chassis frame rails.

The pump module will be a welded frame work utilizing structural steel components properly braced to withstand the rigors of chassis frame flex.

DUNNAGE AREA

A dunnage area will be provided above the pump enclosure for equipment mounting and storage. This area will be furnished with a removable 3/16" aluminum tread plate floor and will be enclosed on the sides.

NOTE: The size of this storage area may vary when top mounted crosslays, booster reel(s), etc., are specified and located in this area.

**** ****

SUCTION INLETS

Two (2) 6" N.S.T. suction inlets will be provided, one on the driver side and one on the officer side pump panel. A removable strainer will be installed on each inlet.

PUMP SUCTION ENDS

The main pump suction inlets will be furnished with a short suction end, terminating with only the suction threads protruding through the side panel to minimize the distance an exterior appliance protrudes beyond the pump panel.

A 6" NST chrome plated long handle pressure vented cap will be installed on each main inlet of the pump.

FRONT SUCTION

A 6" N.S.T. front suction inlet will be provided at the front of the vehicle, plumbed from the pump.

The front inlet terminates through the right side front face of the front bumper. The suction will be mounted so only the threads protrude through the bumper, allowing enough clearance for the hose coupling to be connected.

The front suction pipe will be equipped with a chrome 6" NSTM thread adapter.

The front inlet will be plumbed utilizing 5", schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the front of the cab. A manual drain will be provided ahead of the front wheel and a panel controlled drain will be provided aft of the front wheel.

A minimum of two (2) grooved pipe couplings will be furnished in this assembly to allow for flex and serviceability.

The front suction inlet will be gated with a 5" Bray in-line, full flow butterfly valve, located in the pump compartment.

An Akron model 59 inlet relief valve will be provided as part of the front suction plumbing, situated outboard of the rear suction gate valve.

The front suction inlet will be gated with a Hand wheel controlled, in-line butterfly valve, located in the pump compartment. The valve will be controlled at the pump operator's panel with a chrome plated hand wheel.

One (1) 6" NST chrome plated long handle vented cap(s) will be installed on front suction.

AUXILIARY SIDE SUCTIONS

One (1) 2-1/2" auxiliary suction will be provided at the driver side pump panel, to the front of the main inlet. The 2-1/2" auxiliary suction will terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided for the driver's side front auxiliary suction. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A 1/4 turn swing control handle will be provided on the driver side front auxiliary suction valve.

One (1) 2-1/2" auxiliary suction will be provided at the officer side pump panel, to the front of the main inlet. The 2-1/2" auxiliary suction will terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided for the officer's side front auxiliary suction. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A 1/4 turn swing control handle will be provided on the officer side front auxiliary suction valve.

All side gated inlet valves will be recess mounted behind the side pump panels or body panels.

**** DUAL TANK TO PUMP - TANKER, SIDE MOUNT PANEL ****

DUAL TANK TO PUMP

Two (2) 4" full flow tank to pump lines will be piped through the front bulkhead of the tank with a 90 degree elbow down into two (2) individual sumps located one (1) at front and one (1) at the rear of the tank. These lines will be plumbed directly into the rear of the pump suction manifold for maximum efficiency.

Each tank outlet will be equipped with an in-line check valve to prevent accidental pressurization of the water tank through these plumbing lines. Connection from the valves to the tank will be made using non collapsible flexible rubber hoses.

The sumps will be located with one (1) at the front of the tank and one (1) located at the rear of the tank for pumping on a grade for maximum water utilization.

Each tank to pump connection will be equipped with an Akron Brass 3" Generation II Swing-Out™ Valve between the pump suction manifold and the water tank outlets. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

Each tank to pump valve will be equipped with a separate push/pull control handle which will be located on the operator's panel with function plate.

****** TANK FILL - TANKER, SIDE MOUNT PANEL ******

TANK FILL

One (1) 2 1/2" gated full flow pump to tank refill line controlled at the pump panel will be provided. A deflector shield inside the tank will be furnished. Tank fill plumbing will utilize 2 1/2" high pressure hose for tank connection to accommodate flexing between components.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided between the pump discharge manifold and the water tank. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A push/pull control handle will be located on the operator's panel with function plate.

****** DISCHARGES & ACCESSORIES - SIDE MOUNT ******

DRIVER'S SIDE MAIN DISCHARGE #1

A discharge will be provided and located at the driver's side pump panel. The driver's side discharges # 1 will terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge will be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided for the driver's side #1 discharge. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve will be equipped with a straight 2 1/2" NST adapter that will be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

The driver's side #1 discharge cap provided as standard equipment will be deleted.

One (1) 2-1/2" NSTF X 1-1/2" NSTM reducer with cap will be provided on the driver's side # 1 discharge.

The driver's side # 1 discharge valve will be controlled by a push/pull handle located on the operator's panel.

The driver's side # 1 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

DRIVER'S SIDE MAIN DISCHARGE #2

A discharge will be provided and located at the driver's side pump panel. The driver's side discharges # 2 will terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge will be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided for the driver's side #2 discharge. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seat.

The discharge valve will be equipped with a straight 2 1/2" NST adapter that will be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

The driver's side # 2 discharge cap provided as standard equipment will be deleted.

A 2-1/2" NSTF X 1-1/2" NSTM reducer with cap will be provided on the driver's side # 2 discharge.

The driver's side # 2 discharge valve will be controlled by a push/pull handle located on the operator's panel.

The driver's side # 2 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

OFFICER'S SIDE MAIN DISCHARGE #1

A discharge will be provided and located at the officer's side pump panel. The officer's side discharges #1 will terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge will be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 4" Heavy Duty Swing-Out™ Valve will be provided for the officer's side #1 discharge. The valve will have an all brass body with flow optimizing flat ball and dual polymer seats

The discharge valve will be equipped with a straight 4" NST adapter.

The officer's side # 1 discharge cap provided as standard equipment will be deleted.

A 4" NSTF X 5" Storz Kochek SKE-R 30° adapter with cap will be provided on the officer's side # 1 discharge.

The officer's side # 1 discharge valve will be gated with an Akron Hand wheel controlled, inline valve. The valve will be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

The officer's side # 1 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

OFFICER'S SIDE MAIN DISCHARGE #2

A discharge will be provided and located at the officer's side pump panel. The officer's side discharges #2 will terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge will be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve will be provided for the officer's side #2 discharge. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve will be equipped with a straight 2 1/2" NST adapter that will be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

The officer's side #2 discharge cap provided as standard equipment will be deleted.

A 2-1/2" NSTF X 1-1/2" NSTM reducer w/cap will be provided on the officer's side #2 discharge.

The officer's side #2 discharge valve will be controlled by a push/pull handle located on the operator's panel.

The officer's side #2 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

****** HORIZONTAL CROSSLAYS ******

HORIZONTAL CROSSLAY #1

A crosslay hose bed will be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring will be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #1 will be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #1 hosebed will be designed to accommodate the fire hose in a double stack configuration.

The crosslay discharge will terminate below the hosebed floor with a 1 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor will be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The crosslay #1 discharge will be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling will be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2" Generation II Swing-Out™ Valve will be provided for the crosslay #1 discharge. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The crosslay #1 discharge valve will be controlled by a push/pull handle located on the operator's panel.

The crosslay #1 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

HORIZONTAL CROSSLAY #2

A crosslay hose bed will be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring will be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #2 will be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #2 hosebed will be designed to accommodate the fire hose in a double stack configuration.

The crosslay discharge will terminate below the hose bed floor with a 1 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor will be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The crosslay #2 discharge will be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling will be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2" Generation II Swing-Out™ Valve will be provided for the crosslay #2 discharge. The valve will have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The crosslay #2 discharge valve will be controlled by a push/pull handle located on the operator's panel.

The crosslay #2 discharge will be equipped with a Class One Sub-Z II, 2 ½" diameter interlube filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube will be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel will be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face will be white with black numerals.

****** CROSSLAY OPTIONS – TANKER ******

DEADLAY STORAGE AREA

The remainder of the dunnage area over the pump will be used for 3" hose storage. The hose storage area will have a floor of perforated aluminum material and the sides will be lined with brushed aluminum material.

PUMP ENCLOSURE HOSEBED HOSE RETENTION

A 3/16" polished aluminum tread plate cross lay cover will be provided with a full length stainless steel hinge at the front of the cover.

Vinyl flaps will be provided at each side of the transverse cross lay compartment secured to the tread plate cross lay cover by quarter turn fasteners, and equipped with a strap to each end.

The crosslay end flap will be black in color.

****** PUMP PANEL & ACCESSORIES *******

PUMP PANEL - SIDE MOUNT

The pump operator's control panel will be located on the driver side of the apparatus. The pump enclosure side panels will be completely removable and designed for easy access and servicing.

PUMP PANEL MATERIAL

The left side operator's panel, gauge panel, right side pump panel and right side access door will be fabricated from 12-gauge 304L stainless steel with a #4, (150/180 grit), standard brushed finish.

HINGED GAUGE PANEL

A full width, vertically hinged gauge access panel will be provided at the operator's position. Chrome plated positive locks will be provided along with chain holders to prevent the front of the gauge panel from coming in contact with other panels when open.

VERTICALLY HINGED, SPLIT PUMP PANEL OFFICER SIDE

The officer's side pump panel will be split, vertically hinged, to provide complete access to the pump and plumbing on the officer side of the pump enclosure. The panels will be equipped with stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the officer's side panel will be fastened to the lower panel, which will be stationary.

PANEL FASTENERS

Stainless steel machine screws and lock washers will be used to hold these panels in position. The panels will be easily removable to provide complete access to the pump for major service.

CAPS AND ADAPTERS SAFETY TETHER

All applicable discharge and suction caps, plugs and adapters will be equipped with tether cables and secured to the vehicle.

PUMP PANEL TRIM

Highly polished stainless steel trim will be installed around both the driver and officer side pump panels.

PUMP PANEL TRIM PLATES

A high polished trim plate will be provided around each discharge port and suction inlet opening to allow accessibility to the respective valve for service and repairs.

DISCHARGE GAUGE TRIM BEZELS

Each individual discharge gauge will be installed into a decorative chrome-plated mounting bezel that incorporates valve-identifying verbiage and color labels.

COLOR CODED IDENTIFICATION TAGS

Color coded identification tags will be provided for all gauges, controls, connections, switches, inlets and outlets.

PUMP OPERATOR'S PANEL LIGHT SHIELD AND STEP

The officer side pump panel will be equipped with a light shield/step that will be full width of the panel, and will be positioned to cover the lights and prevent glare. The light shield will be fabricated from aluminum tread plate, which will also serve as a step. The step will be a minimum of 8" deep X the width of the pump panel.

The light shield will be equipped with the following lights:

- Four (4) TecNiq 6" long LED lights.

One (1) light under the operator's panel light shield will be actuated when fire pump is engaged in addition to the pump engaged light.

OFFICER SIDE PUMP PANEL LIGHT SHIELD AND STEP

The officer side pump panel will be equipped with a light shield/step that will be full width of the panel, and will be positioned to cover the lights and prevent glare. The light shield will be fabricated from aluminum tread plate, which will also serve as a step. The step will be a minimum of 8" deep X the width of the pump panel.

The light shield will be equipped with the following lights:

- Four (4) TecNiq 6" long LED lights.

The lights will be switched with the operator panel lights.

PUMP OPERATOR'S PANEL

Particular attention is to be given to functional arrangement of all controls. The pump operator's panel will accommodate the following:

- Hinged gauge panel
- Water tank fill valve
- Auxiliary suction valve control
- All discharge valve controls
- Auxiliary engine cooler controls
- Water tank
- Low voltage light and audible alarm
- Pump panel light switch
- Speed counter (Underwriters)
- Pump performance plate (Underwriters)
- Pump serial No. plate
- Master pump drain valve
- Individual drains
- Voltmeter
- Air inlet/outlet at lower driver side panel
- Pump panel air horn actuation button labeled "**EVACUATE HORN**" in white letters with a red background.
- Speaker grille, punched into hinged gauge panel for future radio installation (if space allows).
- 3/8" Pump cooler (Bypass Line).
- Fire Research "Pump Boss" pressure governor control.

PUMP TEST PORTS

The pump panel will be equipped with Vacuum & Pressure test plugs to allow for test equipment to monitor pump pressure and vacuum levels. Chrome plugs and labels will be provided for the test ports.

MASTER GAUGES

One (1) 4-1/2" diameter pressure gauge (labeled: "PRESSURE") and one (1) 4-1/2" diameter compound vacuum gauge (labeled: "INTAKE") will be provided. The master gauges will be Class One Sub-Z II, interlube filled. The gauge faces will be white with black numerals.

PRESSURE & COMPOUND GAUGE RANGES

All applicable pressure gauges will have a range of 0 - 400 P.S.I., and the compound gauge will have a range of -30" - 0 - 400 P.S.I.

ENGINE COOLER

An auxiliary cooler or heat exchanger will be installed in the engine compartment between the engine and the chassis radiator. The cooler will permit the use of water from the pump for cooling the engine. The cooling will be done without mixing engine and pump water.

****** WATER TANK LEVEL GAUGE - TANKER (WITH PUMP) ******

TANK LEVEL GAUGE

An Innovative Controls model #3030385, Ultra-Bright LED water level monitor will be provided on the pump operator's panel. The level gauge will contain fourteen (14) high intensity LED's on the display in a "V" pattern allowing the full, 3/4, 1/2, 1/4 and refill levels to be easily distinguished at a glance. It will be maintenance free and field adjustable.

CAB TANK LEVEL GAUGE

An additional Innovative Controls model #3030372, Ultra-Bright LED water level monitor will be provided in the cab. The level gauge will contain five (5) high intensity LED's on the display in a vertical pattern allowing the full, 3/4, 1/2, 1/4 and refill levels to be easily distinguished at a glance. The display will use a two-dimensional; two-element lens to refract the light from the LED's to provide full 180° visibility for the level indications.

The gauge will use a pressure transducer #3030376-01 installed near the bottom of the water tank to determine the correct volume in the tank.

An Innovated Controls model #3030362, remote relay module will be furnished to provide outputs for large indicator lights on the side of the vehicle.

LARGE LIGHT WATER LEVEL GAUGE, EACH SIDE OF BODY

A large light water level gauge system will be provided on both sides of the body. Each side will have a Whelen model PSTANK, LED strip light mounted on the body as directed. Each light will be surface mounted.

The strip light will be mounted as to indicate the following water levels:

- Green LED cluster — Full tank
- Blue LED cluster — 3/4 tank
- Amber LED cluster — 1/2 tank
- Red LED cluster — 1/4 tank

The red LED's will burn steady to indicate 1/4 tank and will start to flash when the water level drops below 1/4 tank. To prevent distraction to drivers, this tank level gauge will be wired to display only when the park brake is engaged.

LARGE LIGHT WATER LEVEL GAUGE, REAR OF BODY

A large light water level gauge system will be provided on the rear of the body. The Whelen model PSTANK, LED strip light will be surface mounted.

The strip light will be mounted as to indicate the following water levels:

- Green LED cluster — Full tank
- Blue LED cluster — 3/4 tank
- Amber LED cluster — 1/2 tank
- Red LED cluster — 1/4 tank

The red LED's will burn steady to indicate 1/4 tank and will start to flash when the water level drops below 1/4 tank. To prevent distraction to drivers, this tank level gauge will be wired to display only when the park brake is engaged.

CAST PRODUCTS MICROPHONE BOX

A Cast Products #EB0001-1-A, 7" wide x 13.75" high x 6.75" deep microphone box will be provided.

The microphone box will be recessed in an applicable location determined at the Pre-construction meeting.

****** WATER TANK ******

3000 GALLON WATER TANK

The tank will have a capacity of 3000 U.S. gallons and will be elliptical in shape. The tank will be constructed from polypropylene material.

WATER TANK FINISH – MIRROR FINISH STAINLESS STEEL WRAPPED

The exterior portion of the tank that is visible will be jacketed by a mirrored finish stainless steel to provide an aesthetically pleasing appearance. The elliptical portion and both heads of the tank will be jacketed with 3094 stainless steel sheet. There will be Styrofoam filler panels fastened to the outside of the tank shell to provide internal support for the stainless steel jacket. The jacket will be held in constant tension and attached to the tank utilizing stainless steel hardware.

The tank fill tower will be custom wrapped in mirrored finish stainless steel including the tower sides and lid.

WATER TANK CONSTRUCTION POLY ELLIP-T-TANK

The tank and its integral support structure will be manufactured from UV resistant black PT3™ co-polymer ultra high impact polypropylene. The tank will be a fusion welding process utilizing nitrogen shielding gas for optimum weld consistency and purity. Exterior seams are to be extrusion welded for maximum strength and integrity. All exteriors butt welded seams are to be finished off smoothly to provide a flat surface when painted.

The tank will be of a specific configuration and is so designed to be completely independent of the body and compartments. The integral and internal supports must not contain any non-polymer material in their construction. The curved sides will be constructed of 1/2" polypropylene sheet creating a visibly "seam free" exterior surface. The top of the tank will be fitted with removable lifting designed with a 3 to 1 safety factor to facilitate easy removal of the tank. The Closed-Curve™ compartment type baffling system will include transverse partitions that will be manufactured of 3/8" PT3™ polypropylene and extend from the floor to just under the horizontal cover. The longitudinal swash partitions will be constructed of 3/8" PT3™ polypropylene. They will create a multi-vertical baffle plane extending from the floor of the tank to the bottom of the horizontal cover to minimize lateral surge. All swash partitions will interlock with one another and are welded as well as to the walls of the tank. Provisions are to be incorporated for air and water to properly pass through the Closed-Curve™ baffles to facilitate filling and evacuation requirements and will be located in an efficient pattern to reduce water turbulence while in motion.

WATER TANK CAPACITY CERTIFICATION

All tanks will be tested and certified as to capacity on a fully calibrated and certified tilting scale. Each tank will be weighed empty and full to provide precise fluid capacity. Each Ellip-T-Tank™ is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on the weights. Engineering estimates for capacity calculations only will not be permitted for capacity certification.

WATER TANK TANKNOLOGY™ TAG

A tag will be installed on the apparatus in a convenient location and will contain pertinent information including a QR code readable by commercially available smart phones. The engraved information contained on the tag will include the tank manufacturer, the capacity of the water and foam(s), the maximum fill rate and pressure, the serial number of the tank, the date of manufacture, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

WATER TANK ISO CERTIFICATION

The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2000 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

WATER TANK FILL TOWER

The tank will have a manual fill tower with a hinged lid located on the tank cover at or near the center of the tank's length to reduce water spillage when breaking. The fill tower will be constructed of 1/2" PT3™ polypropylene and will be a minimum of 18" x 18" at the outer perimeter of the stack. The fill tower will be fitted with a pressure relieving lid that retains the lid under normal driving conditions and opens under minimal internal pressure should the tank fill rate be exceeded. The tower will have a removable perforated 1/4" thick removable polypropylene screen.

WATER TANK OVERFLOW AND VENT PIPE

The fill tower will be fitted with an integral 8" I.D. schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to an 8" coupling flush mounted into the bottom of the tank to allow water to overflow behind the chassis rear axle.

WATER TANK SUMP AND CONNECTION

There will be one (1) sump constructed of 1/2" PT3™ polypropylene and located to properly interface with the requirements of the completed vehicle. The sump will have a minimum 3" N.P.T. threaded outlet on the bottom to provide a combination clean-out and drain. The tank will have an anti-swirl plate located approximately 2" above the sump.

WATER TANK SUMP CONNECTION

The front bulkhead of the water tank will be fitted with one (1) front and one (1) rear

WATER TANK FLANGES/OUTLETS - TANKER

There will be two (2) standard tank outlets; one for tank-to-pump suction line which will be a minimum of 4" coupling and one for a tank fill line which will be a minimum of a 2" NPT coupling. All tank fill couplings will be backed with flow deflectors to break up the stream of water entering the tank.

WATER TANK MOUNTING

The UPF Ellip-T-Tank™ will rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor for tanks under 40 inches in height. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank will be isolated from the cross members through the use of rubber strips with a minimum thickness and width dimension of 1/4" x 1 1/2" and a minimum Rockwell Hardness of 60 durometer. Where aluminum or steel tubing and channel sub frames are incorporated in the body structure, the use of corner angles are required for the purpose of capturing the tank. Although the tank is designed on a free floating suspension principle, it is required that the tank have adequate hold down restraints to minimize movement during vehicle operation. The tank will include as standard a minimum of two (2) threaded under-tank mounting points to allow the tank to be restrained from the underside. Access to the internal threaded mounting points will be from the underside of the tank. Formed steel brackets, each with six (6) fasteners are provided for each mounting point which will capture a 1 ½" square tube that is built into the tank sub-frame.

**** WATER TANK REAR DUMP – ELLIPTICAL ****

MASTER DUMP POWER SWITCH

A master dump power switch shall be provided in the apparatus cab. This switch must be in the on position for any dump valves on the apparatus to work.

10" NEWTON STAINLESS STEEL DUMP WITH ELECTRIC ACTUATOR - REAR

The rear of the water tank will be equipped with a 10" Newton Stainless Steel Dump Valve, model #1070-34. The dump valve will be electronically actuated. The dump valve setup will be capable of discharging the water tank contents at a rate of at least 1800 G.P.M.

REAR DUMP SWITCHING - DRIVER SIDE

The rear dump switching will be installed on the driver side of the rear body panel. The switch will be a toggle style switch installed in a protective cast enclosure with a hinged door. A light will be installed inside the enclosure to illuminate the switching area. This light will be activated whenever the vehicle marker lights are turned on.

REAR DUMP SWITCHING - IN CAB

The rear dump will be switched by a momentary style multiplexed switch from inside the cab. The switch will be located in an area near the driver and will be a backlit style switch.

The switch will be interlocked with a master dump power switch located in the same switch console. The master dump power switch will provide power to all dumps switching inside the cab. This setup is designed to prevent accidental activation of a dump from inside the cab.

****** WATER TANK BEHIND AXLE DUMPS ******

10" NEWTON STAINLESS STEEL DUMP WITH ELECTRIC ACTUATOR - DRIVER SIDE

The driver side of the water tank will be equipped with a 10" Newton Stainless Steel Dump Valve, Model #1080-34. The dump valve will be electronically actuated. The dump valve setup will be capable of discharging the water tank contents at a rate of at least 1800 G.P.M.

NEWTON STAINLESS STEEL 18" ELECTRIC TELESCOPING CHUTE - DRIVER SIDE

The driver's side Newton Dump will be equipped with a Newton Model #5018-34, 18" electric telescoping, stainless steel dump chute. The primary switch for the chute will be adjacent to the respective dump valve switch.

A polished stainless steel cover will be provided on the driver's fender to cover the dump cutout when the chute is in the retracted position. The cover will be hinged at the top and held in position by a gas-shock stay-arm. The cover will include a switch tied into the compartment door ajar alarm circuit to notify the operator if the door does not retract properly.

DRIVER SIDE DUMP SWITCHING - REAR OF BODY

The driver dump switching will be installed on the driver side of the rear body panel. The switch will be a toggle style switch installed in a protective cast enclosure with a hinged door. A light will be installed inside the enclosure to illuminate the switching area. This light will be activated whenever the vehicle marker lights are turned on.

DRIVER SIDE DUMP SWITCHING - IN CAB

The driver's side dump will be switched by a momentary style multiplexed switch from inside the cab. The switch will be located in an area near the driver and will be a backlit style switch.

The switch will be interlocked with a master dump power switch located in the same switch console. The master dump power switch will provide power to all dumps switching inside the cab. This setup is designed to prevent accidental activation of a dump from inside the cab.

DRIVER SIDE CHUTE SWITCHING - REAR BODY PANEL

The driver's side chute switching will be installed on the driver side of the rear body panel, next to the dump switch. The switch will be a toggle style switch.

DRIVER SIDE CHUTE SWITCHING - IN CAB

The driver's side chute will be switched by a momentary style multiplexed switch from inside the cab. The switch will be located adjacent to the respective dump switch.

The switch will be interlocked with a master dump power switch located in the same switch console. The master dump power switch will provide power to all dump switching inside the cab.

10" NEWTON STAINLESS STEEL DUMP WITH ELECTRIC ACTUATOR - OFFICER SIDE

The officer side of the water tank will be equipped with a 10" Newton Stainless Steel Dump Valve, Model #1085-34. The dump valve will be electronically actuated. The dump valve setup will be capable of discharging the water tank contents at a rate of at least 1800 G.P.M.

NEWTON STAINLESS STEEL 18" ELECTRIC TELESCOPING CHUTE - OFFICER SIDE

The officer's side Newton Dump will be equipped with a Newton Model #5018-34, 18" electric telescoping, stainless steel dump chute. The primary switch for the chute will be adjacent to the respective dump valve switch.

A polished stainless steel cover will be provided on the officer's fender to cover the dump cutout when the chute is in the retracted position. The cover will be hinged at the top and held in position by a gas-shock stay-arm. The cover will include a switch tied into the compartment door ajar alarm circuit to notify the operator if the door does not retract properly.

OFFICER SIDE DUMP SWITCHING - REAR OF BODY

The officer dump switching will be installed on the officer side of the rear body panel. The switch will be a toggle style switch installed in a protective cast enclosure with a hinged door. A light will be installed inside the enclosure to illuminate the switching area. This light will be activated whenever the vehicle marker lights are turned on.

OFFICER SIDE DUMP SWITCHING - IN CAB

The officer's side dump will be switched by a momentary style multiplexed switch from inside the cab. The switch will be located in an area near the driver and will be a backlit style switch.

The switch will be interlocked with a master dump power switch located in the same switch console. The master dump power switch will provide power to all dumps switching inside the cab, this setup is designed to prevent accidental activation of a dump from inside the cab.

OFFICER SIDE CHUTE SWITCHING - REAR BODY PANEL

The officer's side chute switching will be installed on the officer side of the rear body panel, next to the dump switch. The switch will be a toggle style switch.

OFFICER SIDE CHUTE SWITCHING - IN CAB

The officer's side chute will be switched by a momentary style multiplexed switch from inside the cab. The switch will be located adjacent to the respective dump switch.

The switch will be interlocked with a master dump power switch located in the same switch console. The master dump power switch will provide power to all dump switching inside the cab.

****** DRIVER'S & OFFICER'S SIDE REAR DIRECT TANK FILLS ******

DIRECT TANK FILL - DRIVER SIDE

One (1) 2-1/2" NST direct tank fill will be provided at the rear of the body, on the driver side, as low as possible. The direct tank fill will be gated with a 3" Akron ball valve with a swing handle. The fill will be equipped with a 30 degree elbow terminating with a 2-1/2" NST female swivel connection. A quarter turn drain valve will be supplied to bleed off excess pressure with a drain hose routed beneath the rear step area.

DIRECT TANK FILL - OFFICER SIDE

One (1) 2-1/2" NST direct tank fill will be provided at the rear of the body, on the officer side, as low as possible. The direct tank fill will be gated with a 3" Akron ball valve with a swing handle. The fill will be equipped with a 30 degree elbow terminating with a 2-1/2" NST female swivel connection. A quarter turn drain valve will be supplied to bleed off excess pressure with a drain hose routed beneath the rear step area.

****** ELLIPTICAL TANKER BODY DESIGN ******

APPARATUS BODY DESIGN CONSTRUCTION

The body side and compartment assemblies will be designed and assembled to provide maximum strength and durability under all operating conditions.

Special attention will be taken to minimize corrosion on all fabricated parts and structural members of the body. All bolt-on components will be provided with a dissimilar metals isolation barrier to prevent electric corrosion. The body design will also incorporate removable panels to access spring hangers, rear body mounts and fuel tank sending units.

The body assembly will be an all-welded configuration. The body will be completely isolated from the cab and pump module structure.

ELLIPTICAL TANKER BODY

The apparatus design will incorporate the vehicle requirements as specified in the latest revision of NFPA 1901 as required for a "Mobile Water Supply" type apparatus.

The body and side compartment assemblies will be designed and assembled to provide maximum strength and durability under all operating conditions. Each compartment provided will have a minimum load capacity of 500 pounds, providing a total of at least 1000 pounds of storage space.

Special attention will be taken to minimize rust on all fabricated parts and structural members of the body. All bolt-on panels will be provided with a dissimilar metals isolation barrier to prevent electric corrosion.

BODY AND COMPARTMENT FABRICATION - STAINLESS STEEL

All compartment panels and body side sheets will be entirely 12 gauge stainless steel (Type 3CR12). Each side compartment assembly will be both spot welded and stitch welded to ensure proper weld penetration on all panels while avoiding the possible warping caused by a full seam weld. The side compartments will be welded on a fixture to ensure true body dimensions of all door openings. The side compartments and body side panels are then set into a body squaring fixture where the super structure is

installed and the entire body is aligned to be completely symmetrical. The super structure is then welded to the compartment side panels and reinforcement plates are inserted which allows the compartment panels to become an integral component of the body support structure. A full seam weld will not be used due to the applied heat which could distort sheet metal and remove the protective coating from the perimeter of the welded area. All seams will be caulked prior to finish paint to ensure proper compartment seal.

100" WIDE FIRE BODY

The fire body will be 100" wide.

SUPER STRUCTURE - STAINLESS STEEL

The body super structure will be an all welded configuration utilizing a combination of 3" x 1-1/2" Type 3CR12 structural grade tubing and Type 3CR12 structural channel.

The super structure will be designed to totally support the full length and width of the body. The structure will be welded to the body side compartments to incorporate the compartments into an integral part of the body weldment.

The super structure will be bolted to the sides of the chassis frame at a minimum of four (4) points.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body will meet NFPA #1901 anti-slip standards. Aluminum tread plate utilized for stepping, standing, and walking surfaces will be ALCOA No Slip type. Upon request by the Purchaser, the manufacturer will supply proof of compliance with this requirement.

****** COMPARTMENTATION ******

DRIVERS SIDE COMPARTMENTATION

One low side compartment, with a vertically hinged single door, at the front of the body. Overall compartment dimensions 34" High x 32" Wide x 26" Deep, with a door opening of 33" High x 29" Wide. Internal compartment height is 34" High in the forward 14" Deep area and 29" High in the rearward 12" Deep area to accommodate the elliptical tank.(REVERSE HINGE DOOR)

One low side compartment, with a vertically hinged double door, directly forward of the axles. Overall compartment dimensions 34" High x 49" Wide x 26" Deep, with a door opening of 33" High x 46" Wide. Internal compartment height is 34" High in the forward 14" Deep area and 29" High in the rearward 12" Deep area to accommodate the elliptical tank.

OFFICERS SIDE COMPARTMENTATION

One low side compartment, with a vertically hinged single door, at the front of the body. Overall compartment dimensions 34" High x 32" Wide x 26" Deep, with a door opening of 33" High x 29" Wide. Internal compartment height is 34" High in the forward 14" Deep area and 29" High in the rearward 12" Deep area to accommodate the elliptical tank.(REVERSE HINGE DOOR)

One low side compartment, with a vertically hinged double door, directly forward of the axles. Overall compartment dimensions 34" High x 49" Wide x 26" Deep, with a door opening of 33" High x 46"

Wide. Internal compartment height is 34" High in the forward 14" Deep area and 29" High in the rearward 12" Deep area to accommodate the elliptical tank.

REAR SIDE COMPARTMENTS

One (1) compartment will be supplied on each side of the apparatus behind the rear wheels. The compartment provided will be approximately 34" high X 20" wide X 26" deep. The opening will be _35" high x 17" wide.

Door handles, hinges, vents and seals will match all other compartments.

**** ELLIPTICAL LX TANKER BODY OPTIONS ****

COMPARTMENT DOORS

The compartment doors will be flush type with the outer skin fabricated from 304L stainless steel. The door skin will have a formed flange on one (1) side used as a hinge mounting flange. The door skin will have reinforcing channels welded internally which accommodate the inner door pan mounting.

The 2" thick compartment doors will reduce the overall specified compartment depth by 2".

All horizontally hinged doors will be 1" thick to provide additional compartment storage area. The 1" thick horizontally hinged doors will reduce the overall specified compartment depth by 1-1/4".

The inner door panels of each compartment door will be equipped with high polished 16 gauge stainless. Each panel will be fitted to the compartment door framework and will be equipped with adjustment slots for door hardware.

COMPARTMENT DOOR HINGES

Hinges will be full length polished stainless steel piano type. The hinges will be mounted with stainless steel hardware.

COMPARTMENT DOOR SEALS

Enclosed body compartment doors will be equipped with a closed cell gasket. The gasket material will be EPDM to provide a gasket resistant to weather, temperature extremes, and aging.

COMPARTMENT DOOR LATCHES – ROTARY WITH D-RINGS

Externally latched body doors will be equipped with stainless steel D-ring handles.

Rotary door latches will be provided for all full height body doors, which will incorporate rotary latches at the top and bottom of all externally latched single or double doors. Linkages will be provided between the actuation handle and the latch mechanisms.

The blank door of a double door configuration will have rotary latches at the top and bottom of each door with the latch release lever accessible thru the door frame, which eliminates the need to reach inside the compartment to release the door. Linkages will be provided between the actuation handle and the latch mechanisms.

Horizontally hinged doors will be equipped with a single rotary door latch.

COMPARTMENT DOOR STAY ARMS

Eberhard gas shock type door hold open devices will be provided for each vertically and horizontally hinged door.

SWEEP-OUT COMPARTMENT FLOORS

Compartment floors will be welded to the compartment walls and have a sweep out design for easy cleaning.

Compartments with hinged doors will have the door opening flanges bend down to produce the sweep-out design.

Compartments with roll-up style doors will have the external floor flange stepped down, 1/2" high x 2" deep, to produce a sealing surface for the roll-up doors below the compartment floor. The sweep out design will also permit easy cleaning.

STAINLESS STEEL SILL PROTECTORS

A 90° angle door sill protector, fabricated from 18 gauge brushed finish stainless steel will be installed on the bottom external edge of each body compartment door opening to help protect this area from paint chipping.

COMPARTMENT TOPS

Compartment tops will be covered with polished aluminum tread plate on both sides.

COATED FASTENERS

All exterior fasteners will be coated stainless steel screws. Screw threads will be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads will be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws will only be provided as part of vendor supplied component installations.

COMPARTMENT LOUVERS

Ventilation between compartments to atmosphere will be provided and located to avoid water entry into compartments.

ACCESS PANELS

Removable access panels will be provided in all lower compartments (if applicable) to access spring pins, fuel tank sender, electrical junction compartment and rear body mounts.

Protective panels will be located in the rear compartments providing access to the lights and associated wiring. The covers will also serve as protective covers to prevent inadvertent damage to lights or wiring from tools or equipment located in the compartment.

BODY PROTECTION PANELS

The front face of the side compartments, next to the driver and officer pump panels will be overlaid with full height aluminum tread plate protection panels. The overlays will cover the front face of the compartments only, they will not wrap around to the door opening.

BODY SCUFF PANEL

A polished stainless steel scuff plate will be installed on the rear body corners. The scuff plate will extend the full height of the body corner panel.

REAR BODY PANEL

The rear body panel will extend the full width between the beavertails. This panel will extend from the rear step to the lower portion of the water tank. The panel will be bolted in place and will be fully removable. The rear body panel material will be aluminum treadplate as standard. If Chevron striping is specified for the rear of the body then smooth aluminum will be utilized.

REAR STANCHIONS

Stainless Steel light support brackets will be provided on the tank at the rear portion, one each side. The rear mounted stanchions will accommodate the upper rear emergency lighting as well as the rear scene lights.

BODY RUB RAILS

Sacrificial aluminum tread plate rub rails will be mounted at the base of the body, extend outward a minimum 3/4", downward 2" and flange inward 1". The rub rails will extend the full length of the main body and wrap around the rear body corners. Rub rails will be designed to bolt to the body from the bottom side of the compartment area, so as not to damage the body side panels on initial impact and to provide for ease of replacement.

RUNNING BOARD STEPS

The driver and officer running board steps will be fabricated of 3/16" polished aluminum tread plate. The outside edge on each step will be fabricated with a double break, return flange. The steps will be rigidly reinforced with a heavy duty support structure. The running boards will not form any part of the compartment design, and will be bolted into place with a minimum 1/2" clearance gap between any panel to facilitate water runoff.

REAR STEP

The rear step will be twelve (12) inches deep, recessed between the rear portion of the rear side compartments. The step will be fabricated from 3/16" polished aluminum tread plate, and will be rigidly reinforced. The recessed design of the rear step will not restrict the usable space of the side compartments with a 48" wide rear step.

The rear edge of the step will be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. This step will be bolted into place with a minimum 1/2" clearance gap between it and the body panel.

REAR STEP

The rear step will be twelve (12) inches deep, bolt-on type.

The step will be fabricated from 3/16" polished aluminum tread plate, and will be rigidly reinforced.

The rear edge of the step will be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. This step will be bolted into place with a minimum 1/2" clearance gap between it and the body panel.

DELETE REAR STEP COMPARTMENT

A rear step compartment will not be provided.

ANGLED REAR BEAVERTAIL

An angled panel shall be provided on each side of the rear step. This panel shall be painted job color and shall provide an appearance that the body extends through the end of the rear tailboard.

****** HANDRAILS AND FOLDING STEPS ******

GRAB RAILS

All hand rails will be 1-1/4" outer diameter, knurled bright anodized aluminum extrusion, designed to meet NFPA 1901 requirements.

Molded gaskets will be installed between the handrail stanchion castings and body surfaces to prevent electrolytic reaction between dissimilar metals and to protect paint.

GRAB RAIL LOCATIONS:

Grab rails will be provided at the following specified locations. Additional grab rails will be provided adjacent to any additional steps specified to comply with NFPA 1901.

Two (2) vertical rails will be mounted on the rear edge of the beavertails, one (1) each side.

One (1) horizontal, full width handrail will be installed on the rear, below the level of the hose bed.

FOLDING STEP(S) - BODY FRONT DRIVER SIDE

Austin Hardware model FS-200 CHR large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, will be provided on driver side body front to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

FOLDING STEP(S) - BODY FRONT OFFICER SIDE

Austin Hardware model FS-200 CHR large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, will be provided on officer side body front to provide NFPA

compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

SAFETY SIGN(S) AT REAR STEP AND CROSS WALKWAY(S)

Safety sign(s) will be located on the vehicle at the rear step, and at any cross walkway(s), to warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

REAR WHEEL WELL LINERS

Fully removable, bolt-in, 12 gauge stainless steel fender liners will be provided. The wheel well liners will extend from the outer wheel well body panel, into the truck frame. Removable vertical splash shields, inward of the wheels, will be provided to give access to the hydraulic components. The completely washable fender liners will be designed to protect the front and rear compartments and main body supports from road salts, dirt accumulation and corrosion.

REAR FENDERETTES

The tandem rear fenders will be equipped with easily replaceable, polished stainless steel fenderettes. The fenderettes will be equipped with a rubber gasket molding between the body panel and the fender.

****** FENDERWELL STORAGE ******

AIR PACK – AIR BOTTLE STORAGE COMPARTMENTS **(Elliptical Tanker)**

A total of two (2) single SCBA air ***bottle*** storage compartments will be inserted into the body fender area on a 5 degree pitch. The compartments will be located with one (1) on the driver side and one (1) on the officer side, forward of the rear body fender panels. The lower portion of the compartments will be non-abrasive to absorb shock and help secure the bottle. Each storage compartment will be equipped with a polished stainless steel door.

A total of two (2) SCBA air ***pack*** storage compartments will be inserted into the body fender area on a 5 degree pitch. The compartments will be located with one (1) on the driver side and one (1) on the officer side, between the rear body fender panels. The lower portion of the compartments will be non-abrasive to absorb shock and help secure the bottle. Each storage compartment will be equipped with a ***large polished stainless steel door, the size of a side dump door.***

REAR MUD FLAPS

Heavy duty mud flaps will be provided behind the rear wheels.

REAR TOW EYES

Two (2) chrome plated tow eyes will be furnished on the rear of the vehicle, extending through the rear body panel. The tow eyes will be made from plate steel and will be bolted directly to the chassis frame rails with grade 8 bolts. The tow eyes will be smooth and free from sharp edges, and have a minimum eyelet hole of 2-1/2".

****** COMPARTMENT ACCESSORIES ******

ADJUSTABLE SHELVING

Compartment shelving will be constructed of 3/16" brush finish aluminum with a 2" upward bend at front and rear, and side supports. Shelving will be vertically adjustable with spring nuts in aluminum strut channel.

Adjustable shelves will be located as follows:

One (1) in the driver side front compartment

One (1) in the officer side front compartment

One (1) in the driver side rear compartment

One (1) in the officer side rear compartment

One (1) in the driver side compartment forward of rear axle

One (1) in the officer side compartment forward of rear axle

SLIDE OUT FLOOR MOUNT SHELVING

Slide out floor mount compartment shelving will be constructed of 3/16" brush finish aluminum with a 2" upward bend at front and rear, and side supports attached to #250 rated slides. Slide out floor mount shelving will have gas shocks to hold the tray in and out.

Slide out floor mount shelving will be provided as follows:

One (1) in the driver side front compartment

TURTLE TILE

Turtle Tile brand floor material will be installed on all compartment floors. The Turtle Tile will be custom installed to provide full floor coverage.

Floor matting material will be provided on six (6) specified shelf(s) or roll-out tray(s).

The compartment flooring color will be red.

****** PORTABLE TANK SYSTEM ******

PORTABLE TANK STORAGE SYSTEM

A hinged fold-a-tank storage trough will be installed on the officer side compartment cap utilizing a full-length stainless steel hinge. The trough will be fabricated from 1/8" polished aluminum tread plate and will be designed to accommodate a 3500 gallon fold-a-tank. The trough will fully enclose the tank on each end, across the top, and on the outer side. The tank will be held in place by a positive retaining latch system. Two (2) retaining straps will be installed on the inside of the enclosure to secure the tank inside the rack and prevent the tank from contacting the side of the body or elliptical tank.

FOLDING TANK ENCLOSURE

The above specified portable tank storage will be enclosed on the front, rear, top, and outboard side. The top and outboard side will be 1/8" painted aluminum plate. **The outboard side shall be smooth aluminum plate, painted BLACK.**

Two (2) retaining straps will be installed on the inside of the enclosure to secure the tank inside the rack and prevent the tank from contacting the side of the body or elliptical tank.

****** SIDE LADDER STORAGE (DRIVER SIDE - ELLIPTICAL) ******

LADDER MOUNTING BRACKETS

Ladder mounting brackets will be a Cast Products #FA0030-5 to accommodate different ladder banked widths. The brackets will be mounted to the upright support brackets next to the elliptical tank.

LADDER CLARIFICATION

The NFPA-1901 required ground ladders will not be furnished with the completed unit. These items are not being provided by the manufacturer at the request of the purchaser.

****** PIKE POLES AND HOLDERS ******

PIKE POLE STORAGE

Two (2) pike pole tubes will be provided. Each holder will be accessible from the rear of the apparatus. Each pike pole holder will be labeled to indicate the pike pole length.

The pike pole tubes will be mounted in the suction hose storage compartment.

****** SUCTION HOSE STORAGE LX ELLIPTICAL ******

SUCTION HOSE STORAGE COMPARTMENTS

Two (2) suction hose storage compartments will be provided integral to the body, above the body compartments, one (1) each side. Each compartment will have a natural metal interior finish and will be accessed from the rear of the apparatus with a hinged, latching door that will be tied into the "Do Not Move Apparatus" warning system. Each compartment will be capable of storing one (1) hard suction hose.

SUCTION HOSE

Two (2) 15 foot sections of six (6) inch PVC lightweight suction hose will be furnished (Kochek or Firequip Maxi-Flex). Suction hose will be for suction only and not to be used on pressurized hydrants or for relay pumping. Couplings will include a long handle, female swivel on one end and a rocker lug male on the other end. All threads will be six (6) inch N.S.T.

NOTE: All PVC suction hoses are strictly drafting hoses and must not be used on hydrants or in pressure applications, as serious personal injury or death may occur.

SUCTION STRAINER

One (1) 6" NST, Kochek BS60C barrel type strainer(s) will be provided to attach to the suction hose. A Kochek MM601C compartment mounting bracket will also be provided to store the strainer(s) when not in use.

****** LOOSE EQUIPMENT ******

EQUIPMENT CLARIFICATION

The NFPA-1901 recommended double female hydrant adapter will not be provided by the apparatus manufacturer.

ADDITIONAL ITEMS SUPPLIED WITH THE VEHICLE

- 1 - Pint of touch up paint for each color
- 1 -Bag of assorted stainless steel nuts and bolts

LOOSE EQUIPMENT

The following items will be provided and shipped loose with the completed apparatus at the time of delivery:

WHEEL CHOCKS

Two (2) ZICO #SAC-44 folding wheel chocks will be mounted forward of the rear wheels on the driver side below the side running board compartments.

FOLDING WATER TANK

One (1) Husky brand 3500 gallon aluminum frame folding water tank(s) will be provided. The tank(s) when opened will measure 29" high by 171" square, and will fold to a storage size of 29" high by 7" wide by 171" long. The folding tank(s) will be equipped with 22 ounce Exlon.

The Husky Exlon liner(s) will be red in color.

- One (1) 22 ounce vinyl ground cover(s) will be provided for the 3500 gallon portable water tank(s).

The 22 ounce vinyl ground cover(s) will be red in color.

****** PAINT SECTION ******

PAINT, PREPARATION AND FINISH

The PPG Delta, Low V.O.C., polyurethane finishing system, or equal, will be utilized. A "Clear Coat" paint finish will be supplied to provide greater protection to the quality of the exterior paint finish.

All removable items, such as brackets, compartment doors, etc. will be painted separately to insure finish paint behind mounted items. All compartment unwelded seams exposed to high moisture environments will be sealed using permanent pliable caulking prior to finish paint.

BODY PRIMER & PREPARATION

All exposed welds will be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding will be used in preparation for priming.

BODY FINISH PAINT

The body will be finish sanded and prepared for final paint. Upon completion of final preparation, the body will be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The entire body will be buffed and detailed.

BODY PAINT

The inside and underside of the complete body assembly will be painted job color using a PPG Delta System, prior to installation of the body on the chassis or torque box.

COMPARTMENT PAINT

The interior of the body compartments will be painted with Line-X material.

The Line-X coating will be light gray in color.

BODY PAINT

The body paint finish will be PPG Delta System in a single color, to match customer furnished paint codes and requirements.

PUMP / PIPING PAINT

The pump enclosure and pump/plumbing within the pump enclosure will be painted black.

FENDER STORAGE COMPARTMENT PAINT

The interior of the fender storage compartments (if fender compartments are specified) will be finish painted with Light Gray Line-X paint to provide a protective finish.

CHASSIS CAB PAINT

The commercial cab exterior will be finish painted over the original OEM paint with a PPG Delta system, two tone configuration, to match the Purchaser's furnished paint codes.

COMMERCIAL CAB PAINT FINISH GUIDELINES

The chassis will be painted and detailed as provided from the chassis OEM and will meet their quality guidelines.

WHEEL PAINT

The chassis wheels will be painted as provided by the commercial chassis manufacturer.

TOUCH-UP PAINT

One (1) pint of each exterior color paint for touch-up purposes will be supplied when the apparatus is delivered to Stillwater Township.

FINALIZATION & DETAILING

Prior to delivery the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing will include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

RUST PROOFING

The entire unit will be thoroughly rust proofed utilizing rustproof and sound deadening materials applied in manufacturer recommended application procedures. Rust proofing will be applied during the assembly process and upon completion to insure proper coverage in all critical areas.

****** LETTERING AND STRIPING ******

LETTERING

The following lettering/stripping shall be provided with the apparatus:

The bid price shall include the custom 24 carat Gold Leaf lettering.

The bid price shall include a $10,000 allowance for lettering and striping as directed by Stillwater Township.

The lettering and striping layout and design shall closely resemble that which has been applied to Stillwater Area Volunteer Fire Company unit #42-71

****** NFPA REQUIRED SCOTCH-LITE STRIPING ******

SCOTCH-LITE STRIPE

A four (4) inch high "Scotch-Lite" stripe will be provided. The stripe will be applied on a minimum of 60 percent of each side of the unit, 60 percent on the rear of the unit and 40 percent on the front of the unit. The Scotch-Lite stripe layout will be determined by the Fire Department.

The Scotch-Lite will be black in color.

REAR CHEVRON STRIPING

At least 50% of the rear facing vertical surface will be covered with alternating strips of reflective striping.

The striping will be 6" Diamond Grade Scotch-Lite.

The Diamond Grade Scotch-Lite will be Red and Fluorescent Yellow Green in color.

****** WARRANTIES & REQUIRED INFORMATION ******

WARRANTY - NEW PRODUCT - COMMERCIAL CHASSIS

The Bidder shall warrant to Stillwater Township that any new products manufactured by Bidder will be free from defects in material and workmanship under normal use, maintenance and service for a period of one (1) year from date of delivery, subject to the conditions and exceptions stated herein.

Under this warranty, Bidder's obligation is limited to the repair or replacement at Bidder's option, at its factory, by its representative, or by its authorized service facility, of any part found to be defective by Bidder. If Bidder deems it necessary, all parts for which warranty claim is made, will be returned to Bidder, transportation charges prepaid, for examination by Bidder who will be the sole judge as to whether such part was defective in material or workmanship under normal use, maintenance or service.

WARRANTY - BODY STRUCTURE

The proposed body will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit.

WARRANTY - CORROSION

The proposed body will be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

WARRANTY - PAINT

The proposed paint finish will be warranted for a period of ten (10) years from the date of acceptance of the unit.

WARRANTY - LETTERING

The Bidder shall provide a five (5) year warranty against defects in material and workmanship for all graphic processes.

WARRANTY - BRIGHTWORK

The Bidder warrants all bright finish components used in the construction of the fire apparatus against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to Stillwater Township for a period of one (1) year from the date of delivery/acceptance.

The expressed warranty excludes corrosion or degradation of bright finished components caused by damage to the component.

WARRANTY - STAINLESS STEEL PLUMBING WARRANTY

The proposed stainless steel plumbing will be warranted for a period of ten (10) years from the date of acceptance of the unit.

WARRANTY - WATER TANK

The proposed water tank will be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

WARRANTY - FIRE PUMP

Hale Products, Incorporated ("Hale") hereby warrants to the original buyer that products manufactured by Hale will be free of defects in material and workmanship for a period of five (5) years from the date product is first placed into service or five and one-half (5 1/2) years from date of shipment by Hale, whichever period will be first to expire. Within this warranty period Hale will cover parts and labor for the first two (2) years and parts only for years three (3) through five (5).

WARRANTY - CLASS 1 - PRODUCTS

Class 1 warrants that any equipment of our own manufacture (or manufactured for us pursuant to our specifications) found to have defects in material or workmanship during normal use and service, will be repaired or replaced (at our opinion) free of charge, provided that written notice of such defect is received by us within two (2) years, (three 3 years on liquid filled gauges) after initial shipment.

WARRANTY - BRASS PRODUCTS AND VALVES

Brass products shall be warrantied for a period of five (5) years and valves shall be warrantied for a period of ten (10) years.

WARRANTY - HEAVY DUTY VALVES

Heavy Duty Swing-Out Valves shall be warrantied for a period of ten (10) years after purchase against defects in material or workmanship.

BIDDER SHALL SUPPLY WITH ITS BID COPIES OF ALL PROPOSED WARRANTIES EITHER DIRECTLY SUPPLIED BY BIDDER OR BY ANY SUBCONTRACTOR OR SUPPLIER OF BIDDER WITH BIDDER'S BID RESPONSE.

****** NFPA REQUIRED LOOSE EQUIPMENT – PROVIDED BY THE FIRE DEPARTMENT ******

Stillwater Township shall be responsible to provide and install the following list of equipment on the apparatus, prior to placing it in service. This equipment <u>will not</u> be provided by Bidder unless specifically outlined previously in Bidder's proposal.

NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2009 edition in accordance with the applicable requirements, will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

Section 7.6 Suction Hose or Supply Hose.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

7.6.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

7.6.1.1 Where suction hose is provided, a suction strainer shall be furnished.

7.6.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1 (b) or Table 16.2.4.1(c).

7.6.1.3 Where supply hose is provided. It shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

7.6.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, Standard on Fire Hose.

Section 7.7 Minor Equipment.

7.7.2.1 The mobile water supply apparatus shall be equipped with at least 200 fl (60 m) of 2 1/2 in. (65 mm) or larger fire hose.

7.7.2.2 If the mobile water supply apparatus is equipped with a fire pump, the following shall be provided:

(1) 400 ft (120m) of 1 1/2 (38mm), 1 3/4 in. (45mm),or 2 in.(52mm) fire hose

(2) Two handline nozzles, 95 gpm (360 L/min) minimum. It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

7.7.3 Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

(1) One 6 lb. (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus

(2) One 6 lb. (2.7 kg) pickhead axe mounted in a bracket fastened to the apparatus

(3) Two portable hand lights mounted in brackets fastened to the apparatus

(4) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus

(5) One 2 1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus

(6) One self-contained breathing apparatus (SCBA) complying with NFPA 1981, Standard on Open-Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services, for each assigned sealing position. But not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer

(7) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space

(8) One first aid kit

(9) Two combination spanner wrenches mounted in brackets fastened to the apparatus

(10) One hydrant wrench mounted in brackets fastened to the apparatus

(11) One double female 2 1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus

(12) One double male 2 1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus

(13) Two or more wheel chocks. Mounted in readily accessible locations, that together will hold the apparatus. When loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released

(14) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front

(15) Five fluorescent. orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroflective white band no more than 4 in. (102 111m) from the top of the cone, and an additional 4 in. (102 mm) retroflective white band 2 in. (51 mm) below the 6 in. (152 mm) hand

(16) Five illuminated warning devices such as highway flares, unless the live fluorescent orange traffic cones have illuminating capabilities

(17) One automatic external defibrillator (AED)

7.7.3.2 If the mobile water supply apparatus is equipped with a fire pump and none of the intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

7.7.3.3 If the mobile water supply apparatus is equipped with a fire pump, a rubber mallet, for use on suction hose connections shall be carried in a bracket fastened to the apparatus.

7.7.3.4 If the apparatus does not have a 2 1/2 in. intake with NH threads, an adapter from 2 1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

7.7.3.5 If the supply hose carried has other than 2 1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2 1/2 in. NH thread male discharge and to allow the hose to connect to a 2 1/2 in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

14.1.8.4 Fire Helmet.

It is the responsibility of the purchaser to ensure that "Fire helmets shall not be worn by persons riding in enclosed driving and crew areas any time the apparatus in placed in service.

14.1.8.4.1 A location for helmet storage shall be provided.

14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

14.1.10 SCBA Mounting.

It is the responsibility of the purchaser to ensure that any SCBA equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

14.1.10.1 Where SCBA units are mounted within a driving or crew compartment, a positive latching mechanical means of holding the SCBA device in its stowed position shall he provided such that the SCBA unit cannot be retained in the mount unless the positive latch is engaged.

14.1.10.2 The bracket holding device and its mounting shall retain the SCBA unit when subjected to a 9 G force and shall be installed in accordance with the bracket manufacturer's requirements.

14.1.10.3 If the SCBA unit is mounted in a seatback, the release mechanism shall be accessible to the user while seated.

14.1.11 Equipment Mounting.

It is the responsibility of the purchaser to ensure that any equipment installed on the apparatus by them or their subcontractor meets the following requirements prior to placing it in service.

14.1.11.1 All equipment required to be used during an emergency response shall be securely fastened.

14.1.11.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 G force is applied in the longitudinal axis of the vehicle or a 9G force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.

Section 15.9.3 Reflective Striping.

It is the responsibility of the purchaser to ensure that Reflective Striping has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

15.9.3.1''' A retroreflective stripe(s) shall be affixed to 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.

15.9.3.1.1 The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

15.9.3.1.2 The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

15.10 Hose Storage.

It is the responsibility of the purchaser to ensure that any hose storage area includes a positive means to prevent unintentional deployment in order to achieve compliance with the standard prior to placing it in service.

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