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INVITATION TO BID

INSTRUCTIONS TO BIDDERS

This apparatus will conform to the current edition of NFPA 1901 edition.

A written review of the company, in chronological order, detailing the background of the manufacturer shall be provided as part of the Bid proposal.

The body is to be completely built, painted, and installed by the primary body manufacturer, which minimizes third party involvement on engineering, design, service, and warranty issues. Apparatus using a subcontracted body will not be acceptable.

INFORMATION REQUIRED WITH BID

The fire apparatus and equipment to be furnished in meeting these specifications must be the product of an established reputable fire apparatus manufacturer of ten (10) years or more. Each bidder will furnish satisfactory evidence of the manufacturer's ability to construct, supply service, parts and technical assistance for the apparatus specified. The bidder must state the location of the factory and full service center. This service facility must be within one hours travel time to the Town of Windsor.

The general construction of the apparatus will give due consideration to the nature and distribution of the load to be sustained and the general character of the service to which the apparatus is to be subjected when placed in service.

Each bidder must submit a detailed proposal, which accurately specifies the construction method to be used in the apparatus. The purchaser will utilize this proposal to compare the unit proposed with the specifications. To facilitate comparison all bid proposal specifications will be submitted in the same sequence as the advertised specification. Any bidder who fails to submit a set of construction specifications, or who photocopies and submits these specifications as their own construction details will be considered non-responsive. Thus, render such proposal ineligible for award.

If requested by the Fire Department, in order to evaluate the construction methods and material of the various body vendors, a minimum of 72-hour notice, prior to the bid opening must be given. Each manufacturer notified must supply a cross section model of a side body compartment of no smaller than 1/4" scale using full size components, including compartment door and hardware.

Sample will remain with the fire department for a minimum of fourteen (14) days after the bid opening.

EXCEPTIONS/SUBSTUTIONS

These specifications are based upon design and performance criteria, which have been developed by the fire department because of extensive research and careful analysis. Subsequently these specifications reflect the only type of fire apparatus that is acceptable at this time. Therefore, major exceptions to specifications will not be accepted.

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The bidder will make accurate statements as to the apparatus weight and dimensions. All bids will include a complete set of detailed manufacturer's specifications. The Purchaser's standards for bidding Automotive Fire Apparatus must be strictly adhered to, and all bid forms and questions must be complete and submitted with the bid. Omissions and variations will result in immediate rejection of the bid.

Certified engineering performance information and thickness of materials used will be furnished in the bidder specifications.

All specifications herein contained are considered as minimum. Bidders must state the brand of any item provided which is a substitute for the brand or model specified for evaluation by the bidder. The buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The buyer will be the sole judge in determination of acceptable substitutes. The specifications shall indicate size, type, model and make of all component parts and equipment.

To the right side of each paragraph of the fire department specifications, the bidder will state "YES" or "NO" indicating compliance with the specifications. All deviations, no matter how slight, will be clearly explained on a separate cover sheet entitled "EXCEPTIONS TO SPECIFICATIONS". Any exceptions or variations to these specifications must be set forth on separate sheets, indicating page number (s) of the specifications, and must be submitted with the bid. Any bids deemed as taking total exception to these published specifications will result in immediate rejection of the bid.

Proposals that are found to have deviations without listing them will be rejected.

No prototype apparatus will be considered and all design, operational and material features must fully comply with the State and Federal Motor Vehicle Safety Standards.

VEHICLE STABILITY **Y/N**

A. The height of the fully loaded is vehicle center of gravity will not exceed the chassis manufacturer maximum.

B. The front to rear weight distribution of the fully loaded vehicle will be within the limits set by the chassis manufacturer. The front axle loads will not be less than the minimum axle loads specified by the chassis manufacturer, under full load and all other loading conditions.

C. The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 7%.

PERFORMANCE TEST AND REQUIREMENTS **Y/N**

A. The apparatus will meet the performance requirements at elevations of 2000 feet (610 m) above sea level.

B. The apparatus will meet the performance requirements while stationary on any grade of up to and including 6% in any direction.

C. From a standing start, the vehicle will attain a true speed of 35 mph (56 kmph), within 25 seconds on a level road.

D. The apparatus will obtain a will attain a maximum top speed of 65 mph (105 kmph)) on a level road.

E. The apparatus will be able to maintain a speed of at least 20 mph (32 kmph), on any grade up to and including 6%.

F. The apparatus will be tested and approved by Underwriters Laboratories Incorporated in accordance with the standard practices for pumping engines.

G. An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 latest edition.

ROAD TEST **Y/N**

Each manufacturer will conduct road test to verify that the complete apparatus is capable of compliance:

A. The test will be conducted on a dry, level, paved road that is in good condition. The engine will not operate in excess of the maximum no load governed speed.

B. Acceleration test will consist of two runs in opposite direction over the same route.

C. The vehicle will attain a true speed of 35 mph (56 kmph) from a standing start within 25 seconds.

D. The vehicle will attain a true maximum top speed of 65 mph (105 kmph)

E. The apparatus is equipped with an auxiliary braking system, the apparatus manufacturers will road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

F. The service brakes will bring the fully laden apparatus to a complete stop from an initial speed of 20 mph (32 kmph) in a distance not exceeding 35 feet (10.7M) by actual measurement, on a substantially hard, level surface road that is free of loose material, oil, or grease.

FAILURE TO MEET TEST **Y/N**

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty-(30) days from the date of the first trials. Such trials will be final and conclusive and failure to comply with changes, as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes will also be cause of rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use with the permission of the manufacturer will not constitute acceptance.

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WARRANTIES **Y/N**

To insure single point service support, the manufacturer of the vehicle will certify that it is the single source contact for warranty on the entire vehicle.

The following warranties will be provided:

A. Chassis
B. Chassis Frame Rails- Lifetime -Custom chassis only
C. Engine
D. Transmission
E. Rear Axle
F. ABS/Traction Control
G. Fire Pump
H. Hydraulic Generator
I. Water Tank
J. Apparatus Body
K. Rust
L. Paint

CHASSIS FRAME WARRANTY **Y/N**

The apparatus manufacturer shall provide a lifetime warranty to the original purchaser against cracking of the frame rails and a 20 year warranty against frame failure.

ENGINE WARRANTY **Y/N**

There shall be a five-(5) year or 100,000 mile warranty provided by the engine manufacturer, whichever comes first, after the date of delivery to the first user.

TRANSMISSION WARRANTY **Y/N**

The transmission shall have a five-(5) year warranty, with unlimited mileage, parts, and labor included.

MERITOR (ROCKWELL) AXLE WARRANTY **Y/N**

The standard Meritor (Rockwell MFS) five-(5) year parts and two-(2) year labor warranty with unlimited miles. Wear items are not covered.

WABCO ABS W/TRACTION CONTROL **Y/N**

Warranty on this system is 3-years/300,000 miles.

PUMP WARRANTY **Y/N**

The Waterous pump shall have a pump warranty to include parts for a period of five-(5) years

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HYDRAULIC GENERATOR (if acquired) **Y/N**

The Hydraulic Generator shall be warranted by the manufacturer for a period of not less than two years or two thousand hours, which ever should come first.

POLY TANK WARRANTY-LIFETIME **Y/N**

The poly tank manufacturer warrants each tank to be free from manufacturing defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in fire suppression). The warrant is transferable, with written approval of the manufacturer. Each tank is inspected and tested for leaks prior to leaving the manufacturing facility. The tank shall be installed in the vehicle in accordance to the manufacture's guidelines.

APPARATUS BODY WARRANTY **Y/N**

There shall be a fifteen (15) year body warranty on each new fire body/pumper apparatus. The bodies are to be free of structural failures caused by defective design or workmanship for a warranty period of fifteen (15) years after the date on which the vehicle is first delivered to the original purchaser or 100,000 miles, whichever occurs first.

PAINT/CORROSION WARRANTY **Y/N**

There shall be a ten (10) year paint/corrosion warranty provided. This warranty shall cover perforation, blistering, peeling, or any other adhesion defects caused by defective manufacturing methods, or material selections, for a warranty period of ten (10) years or 100,000 miles which occurs first, after the date of which the vehicle is first delivered to the original purchaser.

CAB CORROSION PROTECTION **Y/N**

A corrosion preventative material shall be applied during cab construction. A ten-(10) year warranty against corrosion perforation, blistering, peeling, or any other adhesion defects shall be provided for the cab.

TWO-YEAR PARTS & LABOR WARRANTY **Y/N**

There shall be a two-(2) year extended mechanical parts and labor warranty provided with the apparatus. The apparatus shall be free of defects in material and workmanship for a warranty period of two-(2) year after the date on which the apparatus is first delivered to the original purchaser.

APPARATUS DELIVERY TIME **Y/N**

Bidders shall indicate delivery of the completed apparatus in determined number calendar days. See the cover document for additional details.

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INFORMATION/CERTIFICATIONS **Y/N**

The following information and original certifications will be required at time of delivery. The apparatus manufacturer will supply this information (if applicable):

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

a. Owner's name and address

b. Apparatus manufacturer, model, and serial number

c. Chassis make, model, and serial number

d. GVWR of front and rear axles

e. Front tire size and total rated capacity in pounds (kilograms)

f. Rear tire size and total rated capacity in pounds (kilograms)

g. Chassis weight distribution in pounds (kilograms) with water and manufacturer mounted equipment (front and rear)

h. Engine make, model, serial number, rated horsepower, related speed & governed speed

i. Type of fuel and fuel tank capacity

j. Electrical system voltage and alternator output in amps

k. Apparatus low voltage system

l. Battery make, model, and capacity in cold cranking amps (CCA)

m. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number

n. Pump transmission make, model, serial number, and gear ratio

o. Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number (where applicable)

p. Water tank certified capacity in gallons

q. Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms) (if applicable)

r. Paint manufacturer and paint number(s)

s. Company name and signature of responsible company representative

(2) Certification of slip resistance of all stepping, standing, and walking surfaces

(3) The pump manufacturer's certification of suction capability

(4) A copy of the apparatus manufacturer's approval for stationary pumping applications

(5) The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed

(6) The pump manufacturer's certification of the hydrostatic test

(7) The certification of inspection and test for the fire pump or the industrial supply pump

(8) Certification of the test for the fixed line power source

(9) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)

(10) Written load analysis and results of the electrical system performance tests

(11) Certification of capacity of the water tank prior to the delivery

REQUIRED DOCUMENTATIOM – MAJOR OPERATING SYSTEMS **Y/N**

The Fire Apparatus Manufacture will also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

(1) Manufacturer's name and address

(2) Country of manufacture

(3) Source for service and technical information

(4) Parts replacement information

(5) Descriptions, specifications, and ratings of the chassis, pump

(6) Wiring diagrams for low voltage and line voltage systems to include the following information:

(a) Pictorial representations of circuit logic for all electrical components and wiring

(b) Circuit identification

(c) Connector pin identification

(d) Zone location of electrical components

(e) Safety interlocks

(f) Alternator-battery power distribution circuits

(g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

(7) Lubrication charts

(8) Operating instructions for the chassis, any major components such as a pump and any auxiliary systems

(9) Instructions regarding the frequency and procedure for recommended maintenance

(10) Overall apparatus operating instructions

(11) Safety considerations

(12) Limitations of use

(13) Inspection procedures

(14) Recommended service procedures

(15) Troubleshooting guide

(16) Apparatus body, chassis, and other component manufacturer's warranties

(17) Special data required by this standard

(18) Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results

(19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The Fire Apparatus Manufacture will deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied.

LETTER OF AUTHORIZATION **Y/N**

A dealer/agent in the name of a particular manufacturer submits the bid, the bidder will include in the bid proposal, a copy of the appropriate Letter of Authorization, authorizing the dealer/agent to sign on behalf of the manufacturer.

LICENSES & REGISTRATION **Y/N**

The successful bidder must have all current licenses required by The State of Connecticut and must be registered to do business in the State.

LIABILITY **Y/N**

The bidder, if his bid is accepted will defend against all suits, assume all liability for the use of any patented process, advice, or article forming a part of the apparatus of any appliance furnished under contact.

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SERVICE VEHICLES **Y/N**

The manufacturer and/or their local dealer shall have a fleet of company owned service vehicles operated by full time employees. The vehicles shall be available 24 hours a day, seven days a week to respond to customer needs.

MANUFACTURER & DEALER SERVICE CONTACTS **Y/N**

The manufacturer and dealer must have a 24 hour a day, seven days a week, emergency hot line. They must be capable of providing both in-house and on-site service for the apparatus. The service technicians shall be EVT certified. On-site service and maintenance shall be the primary function, to eliminate the vehicle having to leave the fire department jurisdiction. Copies of the certifications shall be made available through the Human Resources office.

CERTIFIED WELDERS **Y/N**

The manufacturer shall employ individuals that are certified aluminum and stainless steel welders. An outside testing laboratory shall certify the welders. The certifications shall be available for viewing through the Human Resources office upon request.

BODY WEIGHT DOCUMENTATION **Y/N**

The manufacturer shall weigh each body prior to mounting on the chassis. The information shall be included in the documentation of the finished vehicle. Each body produced by the manufacturer shall be weighed, not just one body per model.

VIRTUAL MANUFACTURING **Y/N**

The manufacturer shall have a web site available for the customers to 'watch' their unit being produced.

TILT TABLE TESTING **Y/N**

In compliance with the latest addition of NFPA 1901, Section 4.13.1.1 and SAE J2180, this vehicle exceeds the following “Tilt Table” procedures measuring the Static Rollover Threshold for Heavy Trucks set forth by the current standards. All equipment required for meeting current testing guidelines shall be located at the manufacture's facility and actual testing performed and certified by an independent third party testing company.

The vehicle shall be tilted at a minimum of 27 degrees evaluating the level of lateral acceleration required to roll the vehicle over in a steady turning situation. Transient, vibratory, or dynamic rollover situations are not simulated by this test. The test accuracy’s are accepted for vehicles that rollover at lateral acceleration levels below 0.5 g corresponding to a tilt table angle of less than approximately 27 degrees.

In addition to receiving a certificate of compliance, the purchaser also requires a wheel-end loading certification listing the weight on each wheel, with the vehicle on the tilt table. In accordance with NFPA 1901, 4.14.13.3, the results of the wheel-end loading shall certify the vehicle, at the time of its manufacture, is in compliance, with side-to-side weight distributions.

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PRINCIPAL DIMENSIONS **Y/N**

Each bidder is required to provide the approximate dimensions of the apparatus being submitted.

- Overall Length
- Overall Width
- Overall Height
- Wheelbase
- Cab to Axle

PRE-CONSTRUCTION CONFERENCE-FIRE DEPARTMENTS LOCATION **Y/N**

A pre-construction conference shall be held prior to the actual construction of the vehicle(s). The conference shall be held in the Fire Departments' facility with representatives of the Fire Department and appropriate representatives of the successful bidder.

At the pre-construction conference, the successful bidder shall review, in detail with the Fire Department, the specifications of the unit as it is to be built. Specific component locations shall be determined and all pertinent information shall be noted for future reference. Details gathered at the pre-construction conference shall be utilized in formulating the approval drawings and final build specification.

PROPOSAL DRAWING **Y/N**

There shall be a proposal drawing submitted to the Fire Department. This drawing shall be a scaled accurate depiction the apparatus proposed.

APPROVAL DRAWING **Y/N**

Prior to construction, the successful bidder shall provide three approval drawings of the apparatus for the fire department's review. The drawings shall show such items as the chassis being utilized, lights, horns, sirens, pump panels, and all compartment locations. Dimensions should include all compartments, chassis height and length and any other pertinent dimensions. The print shall be a visual interpretation of the unit as it is to be constructed. The buying authority shall sign all drawings. One print shall be retained by the Fire Department, the dealer shall retain one print, and one print, shall be returned to the manufacturer.

INSPECTION TRIP – PRE-DELIVERY INSPECTION **Y/N**

There shall be one (1) inspection trip for four (4) representatives of the buying authority at the facility where the apparatus is being constructed. The inspection trip shall be completed prior to delivery of the apparatus. Factory and Sales representatives shall be available at the time of inspection. Transportation, lodging and meals, shall be the responsibility of the successful bidder. All reasonable requests made during the inspection shall be granted, included but not limited to the use of a vehicle lift at no additional charge.

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CUSTOM CAB **Y/N**

It is the intent of the technical specifications contained herein to ensure the custom cab and chassis we have specified shall be engineered, designed, and manufactured exclusively for heavy-duty continuous use in extreme environments and rigorous adverse conditions.

Each custom cab and chassis shall be manufactured in strict compliance with all applicable requirements as set forth in the current edition of the National Fire Protection Association pamphlet 1901 with maximum firefighter safety as the key focus factor throughout the design and development phase of each fire and rescue chassis.

APPARATUS BODY **Y/N**

The apparatus may be constructed of aluminum or stainless steel, the bid document shall include a detailed dialogue of the following:

- **SUBFRAME**
- **BODY CONSTRUCTION**
- **COMPARTMENT CONSTRUCTION**

CHASSIS FRAME **Y/N**

To insure superior corrosion and chemical resistance all frame rails, frame components and inner frame liners shall be either:

•E-Coated
•Hot dip galvanized

The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus.

The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle.

Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb. over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb. over the rear axle.

The frame rails shall be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges

Frame cutouts shall be made with a plasma torch in order to minimize the heat-affected zone caused by the cut.

All frame-mounted components shall be secured with grade eight bolts with hardened washers and distorted thread locknuts. Flanged head bolts with nylon locking nuts, or huck bolts shall not be acceptable.

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APPARATUS CAB **Y/N**

The Command cab shall be an engine forward long four-door (flat roof) tilt cab constructed of stainless steel or aluminum. For reasons of structural integrity and enhanced occupant protection, the cab shall be of heavy duty design, constructed to the following minimal standards. The cab shall be designed specifically for the fire service and shall be manufactured by the chassis builder.

The cab shall have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar shall be constructed of solid A356-T5 aluminum. The B-pillar and C-pillar shall be constructed from 0.25" heavy wall extrusions. The rear wall shall be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2) 3.00" x 2.00" inner aluminum extrusions. All main vertical structural members shall run from the floor to 6.50" x 4.875" x 0.1875" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.36" thick corner casting at each of the front corners of the roof assembly.

The front of the cab shall be constructed of a 0.25" thick gusset plate, covered with a 0.090" front skin (for a total thickness of 0.34"), and reinforced with a 95.00" wide x 11.13" deep x 0.50" thick cross-cab support located just below the windshield. The cross-cab support shall run the full width of the cab and weld to each A-pillar, the 0.25" thick gusset plate and the front skin.

The cab floors shall be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.50" thick cross-floor support providing a total thickness of 0.6875" of structural material at the front floor area. The front floor area shall also be supported with one (1) 0.50" plate bolted to one (1) 0.78" plate that also provides the mounting point for the cab lift. This tubing shall run from the front of the cab to the 0.187" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

The cab shall be 94.75" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The back wall of the cab shall measure 67” from the center of the front axle.

The floor to ceiling height inside the crew cab shall be 54.00" in the center and 59.25" in the outboard positions.

The crew cab floor shall measure at least 40" from rear wall to the back side of engine tunnel.

A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

Entrance step wells to the driver's and officer's positions shall be a minimum of 26" wide and the rear crew step wells shall be 26" wide. They shall be "spaced" from the step well walls at front, rear and side to prevent trapping of dirt and other residue. Entrance steps shall be made of expanded aluminum grating.

All storage areas inside the cab shall fully comply with NFPA 1901 9G restraint requirements.

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DOUBLE WALL CAB FACE **Y/N**

The cab front shall be of double wall construction resulting in a sealed firewall, which provides for increased structural integrity, crew safety, and reduced road noise in the passenger area.

The firewall shall be .25" aluminum welded to a .5" thick engine tunnel that is tied to the doorposts with a .5" thick semi-crosscar support, providing a rigid front that holds the cab together.

The outer wall is used for mounting forward lighting, grill and windshield wipers.

The inner portion shall be treated with a heavy black undercoating material for corrosion prevention.

CRASH TEST **Y/N**

The cab shall exceed the strict and detailed requirements of the Economic Commission for Europe Structural Standard, ECE-29R. The test shall consist of an impact load test and a vertical load test to the cab.

The cab shall have a frontal impact tests via pendulum, with an impact load in excess of 127% of the ECE-29R Standard. The estimated speed of the 3736-lb (1698-kg) pendulum shall be a minimum of 18.2 mph. The cab doors shall be closed during the impact test but be able to open after impact. There shall be no passenger intrusions or any structural component failures. The cab shall meet or exceed all criteria of this portion of the test.

In conjunction with the frontal impact test, a vertical load test shall be implemented to the cab. The cab roof shall be loaded with a minimum of 65,979 lbs. (29.53 metric tons). There shall be no failure to the cab structure or mountings, any passenger compartment intrusion or degradation of occupant survival space, or any other structural failure. The cab shall met or exceed all criteria of this portion of the test.

A complete photographic, video, data, and dimensional record of these tests shall be available and placed on record for customer evaluations.

AIRBAGS **Y/N**

The vehicle shall be equipped with both frontal air bags and a side roll protection system to protect all of the vehicle’s occupants in the event of an accident or roll-over.

SEALED ENGINE TUNNEL **Y/N**

The engine tunnel shall be a structural part of the passenger cab.

After welding, the seams shall be completely sealed with silicone caulking.

Engine enclosures that are not an integral part of the cab structure are not acceptable.

The interior of the engine tunnel shall be insulated with a minimum 1.5” thick foil backed insulating foam, attached with stud and button method. A cross-section analysis of the insulation shall reveal a 1/8” thick barrier material for additional noise and heat insulation.

An insulated covering shall be fitted over the engine tunnel. Made from the same material as the cab floor insulation, this covering shall insulate the cab from engine heat and noise. An access door on the back of the engine tunnel shall provide access for fluid checks.

The back side of the engine cover, as well as a 2” to 3” return on the top side, shall be covered with aluminum diamond plate and be of sufficient strength to allow for 9G resistant mounting of any optional hand lights, entry tools, or other fire rescue equipment specified by the customer.

Mounting Provisions for tools, hand lights, etc. shall be a 1/4" Alum plate full engine tunnel cover, finished and painted to match the cab interior with mounting provision spacing of 1.00"

CAB ROOF DRIP RAIL **Y/N**

For enhanced protection from inclement weather, a drip rail shall be furnished on the sides of the cab. The drip rail shall be constructed of bright polished extruded aluminum, and be bonded to the sides of the cab. The drip rail shall extend the full length of the cab roof.

INTERIOR CAB INSULATION **Y/N**

The cab shall include 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

CAB DIMENSIONS **Y/N**

All bids to document the following dimensions:

- Overall width skin to skin
- Overall vehicle width
- Overall length
- Cab Height Front:
- Cab Height Rear
- Center of front axle to back of cab:
- Windshield area
- Front grill opening
- Side grill opening
- Cab full tilt angle
- Cab full tilt height:
- Floor to ceiling in front
- Floor to ceiling in outer rear
- Floor to ceiling in center of rear
- Engine cover height

WHEEL WELL LINERS **Y/N**

Full wheel well liners shall be installed beneath the cab to protect the bottom of the cab from road splash. The liners shall be full width.

The wheel well liners shall be attached with threaded fasteners and be easily removable for service.

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FENDERETTES **Y/N**

Black rubber fenderettes shall be installed at the wheel well openings. A gasket or seal shall be installed between the fenderette and cab to eliminate chaffing of the paint and a build-up of solids.

WINDSHIELD **Y/N**

A curved safety glass windshield shall be provided with over 2,754 square inches of clear viewing area. The cab windshield shall have bright trim inserts in the rubber molding holding the glass in place. Economical windshield replacement glass shall be readily available from local auto glass suppliers.

All cab glass tinting shall be determined at the preconstruction conference.

INTERMITTENT WINDSHIELD WIPERS **Y/N**

Two electric "Pantograph" style windshield wipers shall be installed on the front face of the cab. The motors shall operate to give superior wiper coverage and include 24” wiper blades. The washer reservoir shall be able to be filled without raising the cab..

A switch located on the turn signal control arm shall operate the intermittent wipers.

EXTERIOR GRAB RAILS & HANDRAILS **Y/N**

All Grab Rails and Hand Rails shall be manufactured by Hansen and shall be1.25" diameter slip-resistant, black anodized knurled aluminum handrail. All rails shall be minimum 24” in length.

A molded rubber gasket shall be mounted between the rail stanchions and the cab in order to prevent corrosion due to dissimilar metals being in contract.

Each handrail shall be e-coated and have black powder coated stanchions.

All rail stanchions shall have weep-holes and ramp design to assure maximum water egress.

Handrails shall be located on the front of the body in positions needed to meet NFPA requirements.

ACORN NUTS **Y/N**

Acorn nuts shall be installed on all exposed screws and bolts in areas where personal injury may result and/or damage to equipment may occur.

EXTREME DUTY CAB INTERIOR **Y/N**

Cab floors shall be covered with a pebble grain rubber matting with barrier type insulation. Edges of the insulation shall be trimmed with aluminum extruded angle for a pleasing appearance.

The cab shall have a custom built smooth plate dashboard, overhead console, glove box, instrumentation panel and switch panel. The front overhead shall include room for two sun visors and the door open indicator light.

The front door posts shall be trimmed with styled covers that conceal any wiring, as well as including a mounting area for rubberized grab handles. The center windshield post shall be covered Ultraliner paint finish.

Prior to installing the headliner and rear wall padding, minimum R-7 insulation, shall be installed between the interlocking extrusions.

These covers serve to finish the interior, cover wiring harnesses and insulate the interior from sound and heat.

MAP BOX **Y/N**

A map box shall be provided between the driver and officer. It shall be installed on the top of the engine hood. Box shall have three (3) slots spaced on 3.00 inch horizontal centers. Each slot shall be 14.00 inches wide and 8.00 inches deep. They shall slant at a 30 degree angle towards the rear of the truck. The box shall be constructed of .125 inch thick smooth 5052 aluminum sheet metal with welded assembly. It shall be covered with black Line-X. Final location to be determined during the final inspection.

CUP HOLDERS **Y/N**

Two (2) cup holder (s) with a black Line-X finish shall be installed in the cab. The location of the cup holder shall be determined at the Final Inspection.

ELBOW PADS **Y/N**

Two (2) "head bumper style" elbow pads shall be installed on the engine tunnel inboard of the officer and the driver. They shall be covered in black Durawear and be attached to the engine tunnel with Velcro. The rear end of the "elbow pad" shall be 26" off from the dash face.

SUN VISORS **Y/N**

Two (2) Vinyl covered sun visors shall be provided, one on the driver's side and one on the officer's side. Visor shall be supported at both ends to prevent drooping.

GLOVE BOX **Y/N**

The glove box shall be an integral part of the welded dashboard assembly and located on the officer side of the cab. The storage area of the glove box shall bolt in place for easy service access. The door shall be drop down style and constructed from brushed stainless steel with a recessed latch. The area above the glove box shall be flat for a work surface or optional MDT mounting.

TWO-WAY RADIO ANTENNA MOUNT(S) **Y/N**

Three (3) universal antenna mount(s), model MATM, with 17 feet of coax cable and weatherproof cap shall be provided for the two-way radio equipment. The mount(s) shall be installed in the cab roof. The cable shall be routed to the lower dash, or as requested by the customer, with any excess cable secured in an accessible location. All installation locations and cable routing shall be confirmed with the customer during the pre-construction process.

AM/FM/WEATHER RADIO **Y/N**

A radio with AM/FM/Weather capabilities will be installed with speakers in the center of the cab.

CAB SWITCHES AND CONTROLS LAYOUT – DRIVER'S SIDE **Y/N**

All emergency light and work area lighting control switches shall be mounted in a removable panel located in the overhead position on the driver's side of the cab. The light switches shall be "rocker" type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving.

A master warning light switch and individual switches shall be provided to allow pre-selection of emergency lighting. The switch Panels shall be designed to match as close as possible to Windsor Fire Department newest Company 4 Rescue/Pumper switch panel.

TOTAL SYSTEM MANAGER - CLASS 1 **Y/N**

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have two-(2) modes of operation, a "Calling Right of Way" and a "Blocking Right of Way". The "Blocking Right of Way" mode is activated only when the park brake is set. Load shedding shall "only" occur when the apparatus is in the "Blocking Right of Way" mode or when the battery voltage level reaches your programmed shed level.

Outputs 1-12 shall be independently programmable to sequence on with the ignition or master warning switch. Outputs 1-12 shall also be programmable to be activated during the "Calling Right of Way" mode and or the "Blocking Right of Way" mode. Output 13 is user configurable output and is programmable for activating between 10.5 and 15 volts. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 shall be designated to activate a fast idle system. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The Total System Manager shall have a digital display to indicate systems voltage is in normal operation mode and indicates the output configuration during programmable mode.

The Total System Manager shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMR/RFI protection.

POWER STUDS (OVERHEAD SWITCH PANEL) **Y/N**

Four (4) studs shall be provided in the overhead switch panel to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

POWER STUDS (CAB DASH) **Y/N**

Four (4) studs shall be provided in the cab dash area to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

BUSS BAR (UNDER OFFICER'S SEAT) **Y/N**

A four (4) stud buss bar shall be provided under the officer's seat to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

12V POWER POINT **Y/N**

There shall be a (2) two 12-volt (cigar style) power outlet, provided in the cab.

IPAD MOUNT **Y/N**

An iPad mount with wiring shall be installed within reach of the officer. Location to be determined at preconstruction meeting.

KUSSMAUL USB DUAL PORT **Y/N**

One (1) Kussmaul Model# 091-219 USB port shall be installed in the officer's side cab dash. Location to be determined at preconstruction meeting.

KUSSMAUL PDS-100 POWER DISTRIBUTION SYSTEM **Y/N**

Two (2) Kussmaul Model# 290-5711-0 distribution modules shall be installed in the cab. One (1) shall be located behind the Drivers and One (1) behind the officer's seat(s). Location to be determined at preconstruction meeting.

INSTRUMENTATION **Y/N**

For easy viewing, gauges shall be black faced with white lettering and adjustable intensity, amber LED backlighting. In order to reduce replacement and maintenance costs, the gauges provided shall be separate from one another and not in a cluster or arrangement. The gauges shall meet SAE J-1939 protocol to eliminate redundant sending units. Gauges must be fully sealed to 6 psi. Gauges shall have an operating temperature range of -40F to 185F. The gauge crystal shall be polycarbonate, anti-fog, and anti-scratch coated. The panels shall be divided into groups of instruments that make identification sensible and easy to view.

The following panels shall be included:

- Two driver side gauge panels
- One driver side warning light panel
- Driver side pump shift panel
- Driver side park brake panel
- Driver side diagnostic panel
- Driver side ignition panel
- Center mounted, minimum twenty (20) position switch and siren panel
- Officer side information panel

The following instruments shall be included:

- Dial Type speedometer with digital odometer and trip odometer that is active when pumping

- Dial Type tachometer with digital hour meter and trip hour meter along with a digital, four-line diagnostic display
- Dial Type engine oil pressure gauge with warning light and alarm
- Dial Type water temperature with warning light and alarm
- Dial Type transmission temperature with warning light and alarm
- Dial Type front air pressure gauges with warning light and alarm
- Dial Type rear air pressure gauge with warning light
- Dial Type voltmeter
- Dial Type fuel level gauge with low fuel indicator level
- Air cleaner restriction light
- High beam indicator
- Parking brake indicator
- Turn signal indicators
- Diagnostic indicators for airbag, engine, transmission, and ABS

The ignition panel shall include the ignition switch, engine start, instrument lamp dimmer switch, transmission pushbutton shift pad and front air conditioning and/or heating switches and remote heated mirror controls (if applicable).
An anti-lock braking system (ABS) test switch and park brake control valve shall be located to the right of the steering column.

SERVICE ACCESS **Y/N**

The driver's instrumentation area shall be made of textured black non-glare panels affixed to the dash. There shall be a single gauge panel, secured with a bottom hinge and four (4) quarter-turn fasteners. Access to the gauge clusters shall be accomplished simply by releasing the latches and pulling the panel outward. Other gauge access designs are not acceptable.

The chassis electrical panel shall be located in the center of the dash, between the switch panel and the windshield. There shall be a lift up cover with two (2) recessed lift-and-turn latches for quick access to the panel. The underside of the panel shall have a pre-printed diagram that clearly depicts the function of each circuit breaker and relay. The vehicle load manager shall be located in this panel. The opening to the electrical shall measure approximately 19” wide near the switch panel and 37” wide toward the windshield.

There shall also be a main power distribution panel provided behind a drop down door in front of the officer.

Electronic diagnostic connections for the engine, transmission, and ABS brakes shall be located in the lower-left panel on the cab dash.

STEERING COLUMN **Y/N**

The steering column shall be a Douglas Autotec tilt and telescope. A lever mounted on the side of the column shall control the tilt and telescope features. A Signal-Stat (self-canceling) turn signal switch shall be mounted to the column. The steering shaft from the column to the meter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

The steering wheel shall be 18 inches in diameter.

The Signal-Stat turn signal switch shall include the following functions:

- Left and right turn signals
- High beam dimmer control
- Hazard warning switch
- Two speed with intermittent windshield wiper control
- Windshield washer control

INTERIOR FINISH – GRAY **Y/N**

The interior of the cab shall be painted with gray polyurethane Ultraliner. The cab metal finish shall be covered with one coat of base self-etching primer. There shall be a sealer primer applied which shall be sanded to a smooth finish. Two coats of finished paint shall be applied.

The following interior components shall be covered with heavy-duty gray vinyl:

- Headliner (Front and Rear)

The floor mats shall be gray pebble grain vinyl with .250" foam backing. The edges of the floor mats shall be trimmed with bright aluminum angle.

CAB DOORS **Y/N**

All cab doors shall be barrier clearing type doors. Each cab door shall be flush type with two concealed hinges. All cab doors shall open a minimum of 85 degrees. The doors shall be enhanced entry and egress doors with a single full operational window (one piece). Six (6) inch wide strap style door checks shall be provided. The door check's straps shall have a tensile strength of 120 lbs./in of width.

FRONT DOORS **Y/N**

The front doors shall be approximately 37" inches wide by 60" inches tall. The combined viewing area of the windows shall be no less than 796 square inches. For added safety, the front cab door windows shall slant down for maximum visibility.

REAR DOORS **Y/N**

The rear doors shall be approximately 34" inches wide by 60" inches tall. The combined viewing of the windows shall be no less than 867 square inches.

DOOR HARDWARE **Y/N**

The cab doors shall use internal and external paddle latches with a rubber gasket isolating the latch from the painted outside surface. The external latch shall have a black plated finish and the interior stainless steel. Both latches shall be oversized for easy access with a gloved hand. Dovetail catch assemblies shall be installed in the door jamb. The dovetail catch shall be V-shaped providing a positive catch and release system.

DOOR LOCKS **Y/N**

There shall be individual manual twist type door locks at each door handle. In accordance with FMVSS 206, all exterior door locks shall be keyed alike.

WINDOW REGULATORS **Y/N**

The two front cab doors shall be equipped with power window regulators. Two crew cab doors shall be equipped with power window regulators. A control switch for the power window regulator shall be conveniently located for use while seated and strapped in. In addition, a second control switch for each power window regulator will be conveniently located for the driver to operate while seated and strapped in.

DOOR PANELS UPPER **Y/N**

The inner front and rear doors panels shall be covered with a polyurethane Ultraliner extending from the window down to the lower door panel. The door panels shall match the interior job color. All inside door panels shall be bolt-on panel design and shall be removable for repairs.

DOOR PANELS LOWER **Y/N**

The front and rear door kick plates shall be constructed of bright aluminum treadplate extending from the bottom of the upper panel to the bottom of the door.

Four (4) "Stop" signs shall be installed on the vehicle, one-(1) each side front and rear lower door panels.

CAB STEPS **Y/N**

All cab steps shall be of a stationary, fixed design that use no moving parts and requires no periodic maintenance other than cleaning.

There shall be an open-grip, bright finish step at each cab door opening. The area under the step shall be enclosed to prevent road dirt from entering the cab. There shall be provisions made at the front of the step for easily flushing out any dirt accumulation.

At each door opening there shall also be an intermediate cab step. Intermediate steps shall be full width of the door step area and constructed from embossed diamond plate.

STEP HEIGHTS **Y/N**

The distance from level ground to the first cab step shall be no greater than 24 inches without using swing-down style or under-cab “stirrup” auxiliary steps.

The distance from the cab step to the cab floor step shall be approximately 12.5 inches front and rear.

AUXILIARY ENTRANCE STEPS **Y/N**

Auxiliary cab entrance steps shall be provided at each cab door opening (front and rear), below the cab step, to reduce the cab entrance step height to approximately 16 inches.

REAR STEPS **Y/N**

The rear cab door stepping surfaces shall be trimmed with treadplate. There shall be treadplate covers that provide access to the chassis battery system.

CAB TILT PUMP **Y/N**

An electric over hydraulic cab lift pump shall be provided to tilt the cab to service the engine. The pump shall be operated by a remote control that plugs into a socket on the pump panel.

A conveniently located hand type manual backup shall be provided should the electric system fail.

INTERIOR GRAB HANDLES **Y/N**

The following grab handles shall be installed in the cab:

All Grab Rails and Hand Rails shall be manufactured by Hansen and shall be1.25" diameter slip-resistant, black anodized knurled aluminum handrail. All rails shall be minimum 24” in length.

A molded rubber gasket shall be mounted between the rail stanchions and the cab in order to prevent corrosion due to dissimilar metals being in contract.

Each handrail shall be e-coated and have black powder coated stanchions.

All rail stanchions shall have weep-holes and ramp design to assure maximum water egress.

Handrails shall be located on the front of the body in positions needed to meet NFPA requirements.

CAB SIDE ACCESS DOOR **Y/N**

Two (2) cab side access doors hinged at front side shall be provided on the cab, one each side between the front doors and front crew cab windows. Door openings shall be approximately 13.00" wide x 25.00" high. "D" handle type latches shall be provided on the lower rearward part of the door. The doors shall be vertically hinged with. A Six (6) inch wide strap style door check shall be provided on each door.

CAB SIDE ACCESS DOOR SILL PROTECTORS **Y/N**

Brushed stainless steel sill protectors, approximately .50" wide, shall be provided on the cab side access door sills to protect the painted finish.

CAB SIDE ACCESS DOOR FRAME SCUFFPLATES **Y/N**

A highly polished stainless steel scuff plate shall be installed on the striker side of each cab side access door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame post from damage and chips to the paint.

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HEATING AND DEFROSTING **Y/N**

Two front cab heating and defrosting system shall use two-(2) heater units. The units shall be mounted under the dash on the driver's side and one under the officer's side. The units blow toward the windshield through vents in the dash. There shall be two-(2) adjustable vents installed to direct air at the lower portion of the driver and officer seating areas. Two-(2) switches including low/med/high and heat/off shall control the units. The units shall utilize permanent magnet motors.

Two (2) crew cab heaters shall be mounted under the rear facing seats – one each side and shall allow for replacement of the blowers without removal of the core. The blower can be removed through the top of the crew cab seat riser under the seat.

AIR CONDITIONING **Y/N**

The Heavy Duty HVAC System includes an all metal plenum for less intrusion into the cab. The high performance system provides 42,500 BTU output. The evaporator with adjustable diffusers shall be mounted on the engine tunnel.

The air conditioning shall have a temperature control and a three-(3) speed blower capable of circulating 650 cubic feet of air per minute. Auxiliary heater shut off valves shall be provide in the engine compartment and shall be clearly marked and easily accessible.

CAB MIRRORS - DOOR MOUNTED **Y/N**

Two (2) Ramco black finish single frame rear view heated mirrors shall be provided on the cab. The mirror heads shall be heated and remotely adjustable by the driver. The driver's mirror with bus style arms shall be mounted on the driver's door, and the officer's side mirror with bus style arms shall be door mounted. Convex mirrors shall be mounted above the flat lens assembly.

CAB MIRROR FRONT **Y/N**

Front blind spot 8” diameter convex mirror, mounted on top front corner of the right side of the cab.

DRIVER'S SEAT **Y/N**

The driver's seat shall be a Bostrom Model Sierra high-back air suspension seat. The seat shall have 4-way adjustability by the driver in accordance with SAE J1517. The seat shall be equipped with an integrated 3-point seat belt with an automatic retractor. The belt shall be red in color to meet current NFPA requirements.
The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately15.5" wide x 4" high x 17.5" deep, front to back at the top and 13.5" deep front to back at the bottom. Access to this compartment shall be through a vertically hinged door Side opening door, 10.5" wide x 2.5" high.

OFFICER SEAT - FIXED SCBA **Y/N**

An H.O. Bostrom Tanker 450 SCBA seat shall be provided for the officer. This seat shall have 5” horizontal adjustment. A removable padded cover shall be supplied over the SCBA cavity. The seat shall be equipped with an integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The belt shall be red in color to meet current NFPA requirements.

The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 15.5" wide x 10.5 “high x 17” deep, fronts to back at the top and 8.5" deep front to back at the bottom. The compartment shall have a front opening door, measuring approximately 13.5" wide x 8" high.

DRIVER'S SIDE REAR FACING CREW SEAT **Y/N**

One-(1) SCBA outboard, rear facing, seat shall be installed behind the driver. The seat shall be Bostrom Tanker 450 SCBA non-suspension seat. The seat back shall include spring-loaded flip-up headrest and Bostrom. Removable (padded) cover shall be supplied over the SCBA cavity. The seat shall be equipped with 3-point seat belt with automatic retractor. The belt shall be red in color to meet current NFPA requirements.

OFFICER'S SIDE REAR FACING CREW SEAT **Y/N**

One-(1) SCBA outboard, rear facing, seat shall be installed behind the officer. The seat shall be Bostrom Tanker 450 SCBA non-suspension seat. The seat back shall include spring-loaded flip-up headrest and Bostrom. Removable (padded) cover shall be supplied over the SCBA cavity. The seat shall be equipped with 3-point seat belt with automatic retractor. The belt shall be red in color to meet current NFPA requirements.

INBOARD FORWARD FACING CREW SEATS - FLIP-UP **Y/N**

Two-(2) SCBA inboard forward facing, flip-up seats shall be installed in the crew area. The seats shall be installed on the rear wall of the cab directly behind the engine enclosure and be spaced as far apart as practical. The seating area shall allow maximum room for fire fighters in full turn out gear. The seats shall be Bostrom Tanker 400 SCBA non-suspension seats. The seats shall include spring-loaded flip-up headrest and Bostrom Removable (padded) covers shall be supplied over the SCBA cavities. The seat shall be equipped with a 3-point seat belt. The belts shall be red in color to meet current NFPA requirements.

SEAT COLOR **Y/N**

The cab seats shall be gray in color.

SEAT MATERIAL **Y/N**

The seats shall be upholstered in black H.O. Bostrom "Durawear" waterproof cloth fabric.

INTERIOR CREW CABINET **Y/N**

Two (2) forward facing interior crew cabinets with Amdor roll up doors shall be provided. One cabinet shall be mounted outboard of each forward facing seat along the rear wall of the cab.

The compartments shall be 17.00” wide X 60.00” high X 14.00” deep.

The clear door opening shall be 50.00: high X 13.00” wide.

The compartments shall be constructed of smooth aluminum and painted to match the cab interior.

Each compartment shall be furnished with four (4) adjustable shelves with a one inch lip and LED lighting controlled by and automatic door switch.

FRONT GRILL & TRIM **Y/N**

An aluminum mesh grille screen, inserted behind a grille surround, shall be provided on the front center of the cab. The mesh and grille surround shall be black.

HEADLIGHTS **Y/N**

Four (4) front headlights (two high beam &two low beam) shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular JW Speaker model 8800 12-volt LED with black finished trim rings and bezels. The low beam headlights shall be located at the outer position.
Headlamps shall be able to function in the “wig-wag” mode.

TURN SIGNAL LIGHTS **Y/N**

Whelen model C6BTTC, turn light shall be a model C6TC amber (LED) type with directional arrow Optional Black Flange outboard of the headlights at a 45-degree angle off the front of the cab. The lamps shall be visible from both the front and side of the vehicle.

TURN MARKER LIGHTS **Y/N**

Whelen 400 Series Super-LED® model # 40A02ZCR amber LED lamps shall be mounted outboard of the turn signal at a 45-degree angle off the front of the cab. The lamps are part of the warning light module, and are visible from both the front and side of the vehicle.

FRONT WARNING LIGHTS **Y/N**

Four (4) Whelen model C6RSC 600 red LED light heads shall be mounted in Whelen Model C6FB Optional Black flange and shall be installed above the headlights. Additional details can be found on the lighting package description.

Two (2) Whelen model C6RSC 600 red LED light heads shall be mounted in Whelen Model C6FB Optional Black flange and shall be installed on the left and the right side of the front bumper extension. Additional details can be found on the lighting package description.

DOT LIGHTS – LED **Y/N**

Five-(5) Amber LED marker lights shall be installed in black rubber mounting grommets or black mounting flanges or brackets. The lights shall be located as high as practical and spaced per DOT guidelines.

CEILING BEACON **Y/N**

A Whelen model UL-12-R door ajar light shall be located on the cab's ceiling. This light shall be a self-contained flashing light that activates when any of the apparatus doors are open. The lens color shall be red.

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DOME LIGHTS **Y/N**

There shall be four-(4) combination clear/red dome light mounted in the cab headliner. There shall be one-(1) light located over the driver's seat, one-(1) located over the officer's seat, and two-(2) located in the rear crew area over the rear doors, one-(1) each side.

Each dome light shall have a one-piece bezel, which surrounds an individually switched incandescent clear light, and an individually switched LED red light.

The clear lights shall activate when any cab door is opened. Any red lights that are turned on shall automatically switch off when the clear light comes on.

CAB MAP LIGHT **Y/N**

One-(1) cab map light shall be provided. The light shall be a Gooseneck LED Map Light Part # C-MAP-T-LED by Havis Manufacturing. The location of the Cab Map Light shall be determined at pre-construction conference.

ENGINE MAINTENANCE LIGHTS **Y/N**

Two-(2) white 4" LED round lights shall be mounted under the cab. The lights shall automatically activate when the cab is tilted.

CAB STEP LIGHTS **Y/N**

Eight (8) TecNiq model EON, LED step lights shall be provided, two (2) at each cab entrance door. They shall be mounted one (1) above and one (1) below each intermediate step.

All cab step lights shall automatically activate when any cab door is opened, when the parking brake is applied or by a switch on the dash.

GROUND LIGHTS **Y/N**

Four (4) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the cab, per NFPA requirements.

Four (4) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the body, per NFPA requirements.

All cab ground lights shall automatically activate when any cab door is opened, when the parking brake is applied or by a switch on the dash.

AIR HORNS **Y/N**

Two-(2) Grover Model 1510 air horns shall be installed on the apparatus. The air horns shall be constructed from spun brass material and chrome plated. The air horns shall be mounted, one-(1) each side, outboard the frame rails. The sounding unit shall be die cast and easily separated for service. The horns shall be mounted behind the cutouts in the front bumper. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system.

AIR HORN SWITCHES **Y/N**

Air horns shall be operated by dual lanyards and steering wheel horn button to allow the driver and the passenger the ability to sound the air horns.

HIGH IDLE SWITCH **Y/N**

A fast idle switch shall activate an engine high idle. The circuit shall be wired through the neutral safety/parking brake interlock to prevent activation when the transmission is in the road mode. Fast idle shall be set at 1000 RPM's. A switch located inside the cab convenient to the driver shall be provided for this system.

SIREN – ELECTRONIC **Y/N**

There shall be one-(1) The Powercall DX5200 TB3.7 hands free siren control head mounted in the cab so that it can be reached by both the driver and officer while seated. The siren button shall be activated when the siren is in hand free mode. The siren shall incorporate a rotary selector. There shall be an on/off power switch, a push button switch for manual siren or air horn tones, and a noise-canceling microphone with volume control.

SPEAKER – ELECTRONIC **Y/N**

There shall be a Whelen Model SP122 FM 100-watt speaker installed thru the front bumper. The speaker shall be wired to the siren.

Q2B SIREN **Y/N**

There shall be one (1) Federal model Q2B electric siren provided. The siren shall be chrome plated and mounted on the extended front bumper of the chassis. It shall be operated by a switch located in the cab and only active in the response mode. The siren shall be wired thru the master optical warning light switch. The park brake must be released for the siren switch to be active. There shall also be an electric brake switch located in the cab.

SIREN FOOT SWITCH **Y/N**

There shall be separate floor mounted foot switches to operate both sirens installed on the floor of the cab on both the officer's side and driver's side of the vehicle.

BACK-UP ALARM **Y/N**

There shall be one-(1) electronic back-up alarm installed at the rear of the apparatus. The alarm shall be wired to the transmissions output signal and is automatically activated when the transmission is shifted into reverse.

EVENT DATA RECORDER (EDR) **Y/N**

The apparatus will be equipped with an on-board event data recorder (EDR) intended to monitor critical driving habits and the status of safety belt use. The EDR will be capable of recording and storing the following apparatus and drive train data via the SAE J1939 network and hardwired inputs in accordance with NFPA 1901:

1. Maximum vehicle speed in miles per hour (MPH)
2. Maximum engine speed in revolutions per minute (RPM)
3. Maximum engine throttle position as percent full throttle
4. Seat belt status, buckled or not by position
5. Seat status, occupied or not by position
6. Emergency master switch state, on or off

The event data recorder (EDR) will also calculate the following items from the vehicles speed sensor signal.

1. Maximum acceleration shown in miles per hour per second (MPH/Sec)
2. Maximum deceleration shown in miles per hour per second (MPH/Sec)

The event data recorder (EDR) will have the following features:

1. Green power on indicator LED
2. Green CAN communication status indicator LED
3. 28 data input circuits
4. 25 output circuits
5. 24 hour format time stamping of recorded data
6. Month / Date / Year format date stamping of recorded data.
7. Data sampling rate of once per second
8. 48 hour data sampling storage
9. 100 engine hours' worth of recorded summary data held in memory
10. Data reports via USB 2.0 connection meeting USB.org specifications Rev 1.1, 2.0 & 1.0a
11. Data reports importable into Microsoft Excel spreadsheet
12. User configurable password protection and access authority
13. Report producing software compatible with Windows or Apple computer systems
    a) Daily log by date with minute by minute output of all values
    b) Weekly summary with maximum values for each hour of each day
    c) Monthly summary with maximum values for each day of the month

As an integral part of the event data recorder (EDR) a seat belt / position indicator panel will be provided with the following conditions indicated as listed;

1. Green illumination for seating positions that are occupied and the seatbelt is buckled
2. Red illumination for seating positions that are not occupied and the seatbelt is buckled
3. Red illumination for seating positions that are occupied and the seatbelt is unbuckled
4. No illumination for seating positions that are not occupied and the seatbelt is unbuckled

The event data recorder (EDR) shall comply with the following Society of Automotive Engineers (SAE) standards: SAE J771, SAE J1113/1, 2, 3, 11, 12, 13, 21, 25, 41, SAE J1455, SAE J1812 and SAE J1939-21

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CARRYING CAPACITY PLATE **Y/N**

There shall be a permanently attached plate mounted in plain view of the driver in accordance with NFPA 1901 Standards.

The tag shall include the following:

- Overall height
- Overall length
- GVWR
- Seating capacity

SEATING CAPACITY PLATE **Y/N**

There shall be a permanently attached plate mounted in plain view in the cab. The plate shall read "Seating Capacity - 6 People".

FLUID CAPACITY PLATE **Y/N**

A permanently affixed fluid date plate shall be installed in the driving compartment to indicate the type and quantities of the following fluid used in the vehicle.

	Engine Oil
	Engine Coolant
	Chassis Transmission Fluid
	Pump Transmission Lubrication Fluid (if applicable)
	Drive Axle(s) Lubrication Fluid
	Air Conditioning Refrigerant
	Power Steering Fluid
	Transfer Case Fluid
	Generator System Lubricant
	Front Tire Pressure - Cold
	Rear Tire Pressure - Cold

The following information shall also be supplied on the Fluid Data Plate:

	Chassis Manufacturer

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	Production Number
	Paint Number
	Year Built
	Date Shipped
	Vehicle Identification Number

OCCUPANCY/SEAT BELT PLATE **Y/N**

There shall be provided and installed plate(s), which read, "Occupants must be seated and belted when the apparatus is in motion". This plate(s) shall be visible from each seated position.

OVERALL HEIGHT PLATE **Y/N**

A height of vehicle plate shall be mounted in the driving compartment and clearly identified and visible to the driver while seated. The plate shall show the completed fire apparatus height (including warning lights), length, (in feet and inches) and gross vehicle weight (in pounds). The information shall be current to the apparatus manufactured date.

If changes of the vehicle occur while in service, the fire department must revise the height plate.

APPARATUS MOVEMENT WARNING PLATE **Y/N**

A permanently affixed warning plate shall be installed near the door ajar light. The plate shall read:

"DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

DO NOT RIDE PLATE **Y/N**

A permanently affixed warning plate shall be installed stating "DO NOT RIDE". The plate shall be located on the apparatus at the rear step area, and at any cross walks if they exist. The plate is to warn personnel that riding on or in these areas while the vehicle in motion is prohibited.

TIRE PRESSURE MONITORING SYSTEM **Y/N**

A tire pressure monitoring system shall be provided and installed on the vehicle in compliance with the latest version NFPA 1901.

BATTERY CHARGER **Y/N**

The on-board automatic battery charger shall be mounted in the vehicle to maintain the chassis electrical system.

The Auto Charge 1200 senses the batteries in the vehicle and recharges exactly as much as required. The state of charge is indicated by the bar graph located on the front of the unit. The

battery saver contained in the Auto Charge 1200 is a three-(3) amp power supply with a relay to remove the accessory loads from the battery and connect them to the power supply when the charger is energized with A.C. Power. This shall permit the charger to recharge the batteries without supplying the accessory load.

Specifications: Battery Charger

Input:
120 volts, 60 Hz, 10 amps

Output:
12V DC, @ 40 amps

Voltage Sense:
Remote, electronic

Battery Saver:
Output voltage 12V DC Output Current 3 amps

Indicators:
Power - indicates input power applied
Battery Saver - indicates battery saver load exceeds 3 amps
Water-Proof Status Center - remotely located, indicates state of charge of batteries.

AUTO-EJECT MALE RECEPTACLE **Y/N**

There shall be provided one-(1) auto-eject type receptacle. A solenoid wired to the vehicle starter is energized when the engine is started. This instantaneously drives the plug from the receptacle. The receptacle shall be provided with a weatherproof cover. The cover shall be spring loaded to close, preventing water from entering when the shoreline is not connected. The auto eject receptacle shall be mounted in a location specified by the department and is designed to accept a 120 V A.C. from a shoreline plug. The UL maximum allowable amperage draw on receptacles is generally 80% of their listed rating, for example, the 20-amp receptacle should not carry more than 16-amp continuous load. When adding the different amperage draws of the components being installed on the chassis, be sure to figure in whether the components shall draw a continuous load or intermittent load.

SHORE POWER INLET PLATE **Y/N**

A shore-power "Inlet Plate" shall be permanently affixed at or near the power inlet. The plate shall indicate the following:

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

ELECTRONIC STABILITY CONTROL (ESC) **Y/N**

The apparatus shall have a Wabco ABS-based Electronic Stability Control (ESC) which offers another level of vehicle control. This automatic braking management system reduces the possibility of a side rollover and assists in the directional stability of apparatus. Upon reaching critical lateral acceleration thresholds, the system intervenes to regulate the vehicle's deceleration and braking functions. Reducing the engine RPM's by overriding the foot throttle input and applying the engine retarder (if equipped) to slow the apparatus giving the driver added control and maneuverability. The ESC shall also apply braking power to selective wheel of the front and rear axles to assist in

stabilizing the apparatus to its intended direction. This selective braking application and reduction of speed and torque reduces the possibility of spinouts and side rollovers even in adverse conditions.

FRONT BUMPER **Y/N**

The front bumper extension shall be 80,000-psi high tensile steel channel, minimum (10”high x 2" wide x .25” thick approx.). The bumper is designed to protect the front of the apparatus from head-on & angled, impact loads. The bumper shall be securely bolted directly to frame members with grade “8” hardware. The bumper extension shall be painted to match the color of the vehicle.

BUMPER EXTENSION - 24" **Y/N**

Front frame, extension rails, shall be bolted to the main frame through reinforcement plates that are backed by the front engine mounting crossmember. The finished apparatus must be able to be lifted at the front bumper without structural damage to the extension rails from vehicle extraction. The front bumper shall extend twenty-four (24") inches ahead of the front face of the cab and shall be finished with an SS Diamond Plate tread plate gravel shield.

RECESSED FRONT SUCTION **Y/N**

The vehicle shall be equipped with a 6” NST (male) front suction inlet recessed into the front bumper and bumper extension. The recessed area shall be large enough to allow a 6” hard suction line to be connected and shall be furnished with a chrome cap and 6" screen.
A 6” NST x 5” Storz Swivel adapter shall be provided and mounted on the gravel shield. The mounting location shall be determined at pre-construction conference.

FRONT BUMPER CENTER HOSE WELL – FRONT SUCTION **Y/N**

An open compartment shall be installed in the center of gravel shield between the chassis frame rails. The compartment shall be as large enough to house 25’ of 5” hose. This compartment shall have a restraining strap with quick release buckle to secure hose in the hose well. The dimensions of this hose well will be determined & approved at the pre-construction conference.

FRONT BUMPER DRIVER SIDE HOSE WELL – JUMP LINE **Y/N**

An open compartment shall be installed on the driver’s side of gravel shield. The compartment shall be as large enough to house 100’ of 1 3/4"” hose and accompanying nozzle. This compartment shall have a restraining strap with quick release buckle to secure hose in the hose well. The dimensions of this hose well will be determined & approved at the pre-construction conference

FRONT TOW EYES **Y/N**

Two (2) painted "cut plate" type tow eyes shall be furnished. They shall be installed under the SS Diamond Plate tread plate gravel shield, behind bumper, and securely attached (bolted) to the bumper extension frame. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening.

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REAR TOW EYES **Y/N**

There shall be two (2) painted “cut plate” rear tow eyes steel mounted to the frame at the rear of the vehicle. The tow eyes shall be attached to steel weldments that are mounted to the apparatus and designed so that stress will be applied to each chassis frame rail, when utilized. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening

FRONT MUD FLAPS **Y/N**

Mud flaps shall be made from black hard rubber and installed at the rear of the front cab fenders.

Heavy duty mud flaps with manufacturer's logo shall be provided at the rear of each front wheel and at the rear of the rear dual wheels. Front mud flaps shall be a minimum of 15" wide.

REAR MUD FLAPS **Y/N**

Mud flaps shall be made from black hard rubber and installed at the rear of the rear body fenders. Rear mud flaps shall be a minimum of 24" wide and shall be made of 0.38" heavy duty rubber material to prevent "sailing”.

ENGINE **Y/N**

Due to the availability of “on call” road and emergency service, the preferred Engine shall be the Detroit Diesel. The buyer will be the sole judge in the determination of acceptable substitutes. Successful vendor shall provide documentation as to which engine is to be matched to an Allison Gen IV, model EVS 4000P transmission.

Make; Detroit Diesel
Model; DD13
Power; 500hp @ 1800 rpm
Torque; 1650 ft-lb @ 1200rpm
Governed speed; 2080 rpm
Emissions level; EPA 2010
Cylinders; 6
Displacement; 781 cubic inches 12.8L
Starter; Delco 39MT

Make; Cummins ISX11.9 Diesel
Model; ISX11.9
Power; 500hp @ 1800 RPM
Torque; 1645 ft-lb @ 1200 RPM
Govern speed; 2100 RPM
Emissions level; EPA 2010
Cylinders; 6
Displacement; 729 cubic inches, 11.9 L
Starter; 12volt Denso double reduction

AIR CLEANER **Y/N**

A Donaldson Power Core dry type engine air cleaner shall be provided. It shall be installed in a location so that the filter element can be easily serviced.

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AIR RESTRICTION INDICATOR IN INFORMATION DISPLAY CENTER **Y/N**

An electrical engine air restriction indicator shall be provided and installed in the cab information display center.

FRONT AXLE **Y/N**

The front axle shall have an 22,800-pound capacity. It shall be equipped with oil seals and transparent cover for oil level inspection.

FRONT SUSPENSION **Y/N**

For overall safety, handling and performance the front suspension shall be an independent torsion bar suspension system with a capacity of 22,800 pounds. Koni heavy duty shock absorbers shall be installed.

DISC BRAKES - FRONT **Y/N**

The chassis shall be equipped with Knorr/Bendix 17”, Disc brakes.

STEERING SYSTEM **Y/N**

The steering system shall be a package certified by Sheppard/Wabco TRW for the application. All components from the steering column to the drag link shall be manufactured by Sheppard/Wabco. A non-certified system shall not be acceptable.

The steering system shall use a Sheppard/Wabco Model M110 steering gear, which shall have the capacity to static steer the chassis loaded to 22,500 pounds with 425-size tire.

FRONT TIRES **Y/N**

The front tires shall be Goodyear 425/65-R22.5 Load Range "L" G-296 all-weather treads with a combined capacity of 22,500 pounds.

Tires are to be less than one (1) year old when comparing the tire date code to the vehicle’s manufacture date.

CRAMP ANGLE FRONT AXLE **Y/N**

The front axle, cramp angle shall be 45 degrees.

ALUMINUM FRONT WHEELS **Y/N**

The front wheels shall be Alcoa Brush Finish Aluminum with a black finish for 425 tires with a rating of 22,000#.

FRONT WHEEL TRIM **Y/N**

The front axle shall be trimmed with stainless steel "Baby Moon" hubcaps (with hole for oil seals) and stainless lug nut covers.

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REAR AXLE **Y/N**

The rear axle shall be a Meritor (Rockwell) RS-26-185 with a 27,000-pound rating for the fire service. It shall be equipped with oil seals.

REAR SUSPENSION **Y/N**

The single rear axle suspension shall be rated to 27,000 pounds.

REAR AXLE BRAKES **Y/N**

The rear axle shall be equipped with Meritor 16-1/2" x 7" S-Cam air operated brakes with automatic slack adjusters.

STANDARD DIFFERENTIAL **Y/N**

The Rockwell RS series rear axle shall have a standard differential.

VEHICLE TOP SPEED **Y/N**

The rear axle shall be geared for a top speed of the current NFPA standard

WABCO ABS W/TRACTION CONTROL **Y/N**

A WABCO, 4-channel Anti-Lock Braking System shall be installed. The system shall include four-(4) wheel sensors and four-(4) modulators to control and compensate braking force at each wheel

An ABS warning light shall be installed on the driver's dash. The light remains illuminated until the vehicle is moving at least four-(4) miles per hour. An ABS test switch shall be installed in the "Diagnostic Information Panel". The switch, when pressed, sends the system into diagnostic mode causing the ABS light to blink (I/O) indicating a possible systems failure.

Automatic Traction Control (ATC) shall be installed. The ATC system shall sense wheel slip, apply air pressure to brakes, and reduce engine torque to provide improved traction. An ATC indicator light shall illuminate when the system is active.

A mud and snow switch shall be provided. When the switch is in the "ON" position it will allow momentary wheel slip to obtain traction under extreme mud and snow conditions.

REAR TIRES **Y/N**

The rear tires shall be Goodyear Endurance TSD 315/80R22.5 Load Range “L” Deep open-lug enhanced traction design with a capacity of 33,000 pounds and compatible with the On-Spot Chains.

Tires are to be less than one (1) year old when comparing the tire date code to the vehicle’s manufacture date.

ALUMINUM REAR WHEELS **Y/N**

The rear wheels shall be Alcoa Brush Finish Aluminum wheels with a black finish for 315 tires with a rating to match the vehicle requirements.

REAR WHEEL TRIM **Y/N**

The rear axle wheels shall be trimmed with hub and lug nut covers.

COOLING SYSTEM FAN **Y/N**

The engine cooling system shall incorporate a thermostatically controlled, 2-speed fan clutch. When the fan clutch is disengaged, the fan blade rotates-contact free and non-wearing at low RPM'S, driven by a permanent magnet system facilitating improved vehicle performance, cab heating in cold climates, and fuel economy, while eliminating the potential dangers associated with a fan going from non-rotating to rotating as found with other style fan clutches.

The fan shall automatically lock-up when the vehicle is placed in pumping mode.

A fan and shroud shall be installed on the engine. Recirculation shields shall be installed to ensure that air, which has passed through the radiator, is not draw through it again.

ENGINE COOLING SYSTEM **Y/N**

The engine cooling system shall have the capacity to cool the engine according to the engine manufacturer requirements and shall use the approved and recommended anti/freeze coolant.

The level of anti/freeze coolant in the engine company system shall be able to be checked without tilting the cab.

RADIATOR **Y/N**

The engine radiator shall be of a bolted design and have a minimum core area of 1570 square inches. The top and bottom tanks shall be stamped 11-gauge steel. The tanks shall be attached to the header assemblies with a minimum of fifty-(50), 5/16" bolts. The spacing between fasteners shall not exceed 2.00 inches in order to minimize the possibility of leaks.

The header plates shall be made of 16-gauge brass while the tubes shall be .0068-inch thick brass and .076 by .625 inches in size. The tubes shall have a smooth bore with welded seems which allows for cleaning of the radiator.

The radiator shall contain three rows of tubes with a minimum of 98 tubes per row for a total of not less than 294 tubes. The tubes shall be arranged in an inline profile across the core. Louvered serpentine fins constructed of copper with a density not greater than 16 fins per inch shall be used in the construction of the radiator.

The radiator tubes shall be attached to the header plates with a dual bonding process. The coolant side connection shall be welded, while the airside shall be soldered.

The top tank shall include an integral deaeration tank, which removes air from the engine coolant. The top tank shall include a sight glass for coolant level inspection without removing the radiator cap. A low coolant warning shall be incorporated to alert the driver.

The bottom tank of the radiator shall incorporate oil to water plate-type cooler for the transmission. The cooler is designed to cause a turbulent flow of the transmission oil through the core to force heat transfer. The cooler shall be sufficient to cool Allison Transmission without output retarders.

A high efficiency fan shall be surrounded by a fan shroud. The sweep of the fan shall not exceed the width of the radiator core.

Fan diameters that exceed the width of the radiator core shall not be acceptable.

CHARGE AIR COOLER **Y/N**

The charge air cooler shall be mounted directly ahead of the radiator and to the radiator headers. Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

The piping between the charge air cooler and engine shall use four-(4) ply silicone woven Nomex hoses with stainless steel bands. The bands are used to maintain the shape of the hose during changing turbo boost pressures. The hoses shall be attached with stainless steel constant tension hose clamps.

ENGINE BRAKE **Y/N**

The engine shall be equipped with a Jacobs C-Brake compression brake. The switch shall be mounted in the cab and include one-(1) off-low-high switch.

A pump shift, interlock circuit shall be provided to prevent the engine brake from activating during pumping operation. The engine brake shall interface with the WABCO ABS brake controller to prevent engine brake operation during adverse braking conditions.

DRIVELINES **Y/N**

The chassis shall be equipped with Spicer 1810 series driveshaft with strap yokes and universal joints. The driveshaft tubing shall be a minimum of 4.00" diameter with .134" wall thickness. The drivelines shall be balanced at a minimum of 3000 RPM.

ENGINE COOLANT FILTER **Y/N**

A pre-charged spin-on filter, with corrosion inhibitors shall be installed in the cooling system. Shut off valves shall also be supplied before and after the filter housing.

AUXILIARY ENGINE COOLER **Y/N**

The cooling system shall have a tube and bundle engine cooler mounted in the upper radiator water pipe. Water from the fire pump shall be circulated through 1/2" tubing to the cooler. A valve on the pump panel shall control the cooling circuit.

SILICONE COOLANT HOSES **Y/N**

The chassis shall be equipped with silicone hoses for the radiator and heater circuits.

COOLANT HOSE CLAMPS, CONSTANT TENSION **Y/N**

Constant tension hose clamps shall be provided for all coolant hoses of 1/4" diameter and greater.

EXHAUST TREATMENT **Y/N**

The apparatus shall contain a particulate filter down stream of the engine's turbo. This filter is required to maintain the latest EPA Emissions. This filter replaces the conventional style filter. The location has been engineered, tested, and set to allow for proper regeneration. Therefore, this filter cannot be removed, altered, or relocated.

The diesel exhaust fluid tank should be mounted in an easily accessible are for checking the level and refilling and labeled on accordingly. The tank shall be equipped with a level sensor and alarm to prevent run-out. The urea tank shall be accessed by tilting the cab. One (1) tank full of urea solution shall be required for every 500 gallons of diesel fluid.

An indicator light panel for this system shall be located in the cab. This panel informs the driver of the systems status. At times a forced regeneration may be required, which would be indicated by a combination of illuminating and/or flashing lights depending on the engine's model.

The engine exhaust system shall be horizontal in design using aluminized steel tubing mounted under the frame rail right side, extending forward of the rear wheels.

The exhaust will include a factory installed attachment to fit the Plymovent brand exhaust system with a magnetic nozzle.

DPF REGENERATION PROCESS **Y/N**

The regeneration process shall conform to NFPA requirements and shall be activated by two methods:

1) Automatically by the engine system but only when the transmission is in gear and the speedometer indicates a speed above 5 mph (8km/hr.) only when the apparatus is in motion, not in stationary pump mode with an engine rpm sufficient to register 5 mph (8 km/hr.) on the speedometer.

2) Manually when initiated by activation of a switch located in the driver's area of the driving compartment. Standard practice is to inhibit any automatic regeneration when in pumping or aerial mode. There shall also be an inhibit switch placed near the driver to inhibit an automatic re-burn when driving.

EXHAUST HEAT SHIELDS **Y/N**

Heat shields shall be provided as needed to prevent damage to body and wiring from excessive exhaust temperatures. The exhaust pipe shall be wrapped in multi-layered insulation blankets, from just aft of the turbo down to inlet side of the DPF. Each blanket shall have a fiberglass inner layer and a silicone impregnated fiberglass cloth outer layer

The cab shall receive 1.25" thick foil back insulation blanket under the crew floor to reduce floor temperatures. All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

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ALTERNATOR **Y/N**

The alternator shall be 320 amps Leece Neville model 178-131-100, engine driven via a polygroove power belt and tensioned by a threaded rod. The alternator shall meet all current applicable NFPA 1901 Edition requirements for performance.

BATTERIES **Y/N**

The battery system shall be a single system consisting of six-(6) Group 31, 12-volt DC, heavy-duty, high cycle automotive batteries. The battery bank shall have a group rating of 3750 cold cranking amperes (CCA) @ 0 degrees and a reserve of 1,080 minutes at 80 degrees Fahrenheit.

STAINLESS STEEL BATTERY BOXES **Y/N**

The chassis batteries shall be mounted in welded and bolted stainless steel battery box. The battery hold-downs shall be made of structural, stainless steel angle. Painted carbon steel battery boxes shall not be acceptable.

TRANSMISSION – EVS-4000P **Y/N**

The chassis shall be equipped with an Allison EVS-4000P automatic transmission programmed with Aggressive Shifting and electronically controlled. It shall be equipped with operating controls and programmed for Fire Apparatus vocation. An electronic oil level indicator shall be provided as well as a diagnostic reader port connection. The transmission shall be geared to provide one-to-one ratio in fourth gear for fire pump applications. This dedicated "lockup" circuit is provided for pump operation. The transmission fifth gear shall be an overdrive ratio, permitting the vehicle to reach its top speed at the governed engine speed. The manufacturer's recommended heavy-duty transmission fluid shall be standard. The transmission shall be equipped with dual PTO ports with engine speed capabilities.
The transmission shall be cooled by the radiator-mounted heat exchanger.

TRANSMISSION SHIFTER **Y/N**

The transmission shall be controlled by an Allison push button type shift control. It shall be internally illuminated for night operation. It shall be mounted to the right of the steering column on the driver's dash console. The transmission, upon start-up, shall select four-(4) speed operation. By pressing the "mode" switch on the shift pad (mode on) provides five-(5) speed overdrive.

FUEL / WATER SEPARATOR **Y/N**

A Racor model B32001 fuel water separator shall be installed. A water-sensing probe along with a dash-mounted warning light shall be supplied.

AIR BRAKE SYSTEM **Y/N**

The air brake system shall meet the requirements of FMVSS-121. The system shall consist of three-(3) reservoirs with a total capacity of 5100 cubic inches. The system shall be of dual circuit and quick build up design powered by an engine mounted gear driven air compressor. The system shall be protected by a heated air dryer.

Brake piping shall consist of SAE approved, DOT rated "Synflex" reinforced colored nylon tubing. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Braided hoses shall provide flexibility between axle and frame connections. Brake air lines shall be color-coded. Air inlet to air brake compressor shall be from the engine intake manifold, i.e. after transition through the engine air cleaner. A stainless braided Teflon hose shall be provided from the compressor to the air dryer.

MOISTURE EJECTOR(S) **Y/N**

Bendix automatic moisture ejector(s) shall be provided on all air tanks.

WET AIR RESERVOIR DRAIN CONTROL **Y/N**

A cable controlled drain valve shall be provided on the wet tank. The pull cable shall be extended to side of truck with a loop provided at its end.

AIR DRYER **Y/N**

The air system shall include a Bendix AD-9 air dryer with integral 12-volt heated moisture ejector. The air dryer shall have a desiccant cartridge and incorporate an integral turbo cutoff valve. The turbo cutoff allows the air dryer to purge water and contaminates without any loss of turbo boost or engine horsepower.

AUXILIARY AIR INLET **Y/N**

There shall be an auxiliary air inlet installed in the front of the driver's step well to maintain the chassis air pressure while the engine is not running. A check valve shall be installed in the line to prevent outflow of air pressure from the "wet" or "supply" tank. The air inlet shall be equipped with a pressure regulator and gauge which shall be mounted behind the driver seat. The exact location of the pressure regulator and gauge shall be determined at preconstruction meeting.

JUMPER STUDS **Y/N**

One (1) set of battery jumper studs, with plastic color-coded covers shall be installed on the exterior of the battery box. A tag shall be provided for positive /negative terminals.

50-GALLON FUEL TANK **Y/N**

The chassis shall be equipped with a 50-gallon rear mounted fuel tank. The tank shall be constructed of 12-gauge steel. The tank shall be mounted with ss straps with rubber isolators to the bottom flange of the frame rails. The tank shall be certified to meet FMCSR 393.65 and 393.67. It shall be baffled, vented and have a drain plug mounted on the bottom.

A "tube type" fuel sending-unit shall be provided to stabilize fuel level readings due to fuel movement in the tank.

BRAIDED WIRE REINFORCED FUEL LINES **Y/N**

The fuel lines shall be wire braid reinforced fuel hose with reusable fittings, routed along the inside of the frame rails, protected against chaffing by non-conductive frame mounted stand-off fasteners.

HOSE AND HARNESS ROUTING Y/N

Any wiring harness or hydraulic /air hoses that must pass to the outside of the frame shall not run over or under the frame flanges. Hydraulic and airlines shall pass through the frame using bulkhead fittings. All battery cables shall also utilize bulkhead fittings. Wiring harnesses shall pass through the frame within a protective rubber boot. For ease of maintenance, the hydraulic air hoses and electrical wiring harness shall be ran separately down each side of the frame rails. The hydraulic and air hoses run down the right side of the frame rails, and the electrical harnesses run down the left side of the frame rails. All lines shall be wrapped in a heat protective loom where necessary in the chassis.

CAB TILT, LOCK SUSPENSION Y/N

The cab shall be supported at four points. At the front, there shall be two center bonded bronze bushings. At the rear, there shall be two hydraulic locking latches.

The cab shall tilt 45 degrees by means of a pair of hydraulic cylinders driven by the electric pump. The tilt system geometry shall be designed in such a way that the maximum hydraulic pressure in the system does not exceed one-half the pressure rating of the cylinders or pump when the cab is empty. This allows the Fire Department to leave some equipment in the cab when maintenance is required (although this equipment must be secured).

Once the cab is fully tilted, a safety latch shall automatically engage and act as a positive lock. The lock is released by a pull cable. The hydraulic cylinders shall be equipped with velocity fuses to prevent the cab from falling, should the hydraulic system fail.

The front of the cab pivots and rides on the center bonded bushings by means of lubricated pivot pins that retain the cab yoke in the bushings. The bushings allow limited movement of the cab, and isolate the cab from noise and vibration.

The rear mounts consist of a pair of hydraulic cab latches mounted on rubber cushioned mounting brackets. Latches release when the pressure in the tilt system exceeds 500 PSI.

Warning lights shall illuminate at the center warning cluster on the dash, and near the cab tilt control whenever the cab is not fully latched in the down position.

An ignition interlock system shall be installed for cab tilt operation. Cab tilt operation requires both the master battery and ignition switch be in the on position with the parking brake set.

240/120 VOLT BREAKER PANEL Y/N

An electrical circuit breaker box with 240 main breaker and eight (8) 120 volt circuit breakers shall be installed. The breaker box shall include a master breaker sized according to the generator output. The breaker box shall be located in a compartment as specified by the engineering department to meet the current NFPA specifications.

VEHICLE MOUNTED ELECTRICAL OUTLETS **Y/N**

A total of four (4) single receptacles shall be provided; two (2) NEMA L5-20R Twist Lock and two (2) NEMA 5-20R Household, Straight Blade. Each receptacle shall be rated for 20 amps at 125 Volts and shall be located on the back of the crew cab in the area of the FRC telescoping pole lights.

ELECTRIC REWIND CORD REEL **Y/N**

A Hannay Model ELFCR1636-10-11-6 power rewind cord reel for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 4-conductor wiring. Capacity of the reel shall be a minimum of 200 feet 10/4 gauge electric cable. The cord reel shall be wired to the breaker panel and shall be located above the pump panel on the driver's side of the vehicle in the storage area as directed and shall be controlled by a 12-volt electric rewind switch.

The electric rewind shall be controlled via a push button style switch mounted near the top of the pump panel in the area of the reel and roller.

CORD REEL CABLE

One (1) 250' foot length(s) of 10/4 type SO electric cable shall be provided and installed on the cord reel.

CORD ROLLER **Y/N**

Cable reel shall be equipped with a captive roller assembly mounted directly on reel frame. It shall be supplied by Hannay and have a 4-way roller assembly with stainless steel rollers mounted in a stamped steel housing. The roller assembly shall be mounted in such a way as to facilitate the easy operation of the cord and reel whether deploying or retrieving the cord.

CABLE STOP **Y/N**

A molded plastic spherical type stop shall be provided near the end of the cable. It shall prevent damage to the electrical plug or connection when the reel is rewound. Stop shall be drilled for the correct cable size. It shall be a two piece design that clamps over the cable by tightening two bolts. Bolts shall be recessed into the ball to keep them from damaging the roller assembly when it is fully retracted.

ELECTRICAL JUNCTION BOX **Y/N**

An Akron Brass 4-receptacle junction box shall be provided for distribution of electrical power on the fire ground. The box shall be constructed of aluminum and shall be completely powder coated in high visibility yellow with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in "power-on" status. The junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. The box shall be equipped with a 12-inch pigtail with a wire mesh cord grip and a L5-15 connection.

A total of four (4) single receptacles shall be provided; two (2) NEMA L5-20R Twist Lock and two (2) NEMA 5-20R Household, Straight Blade. Each receptacle shall be rated for 20 amps at 125 Volts.

A mounting box, with brushed stainless finish, shall be provided for the junction box.

PUMP SYSTEM TWO STAGE - WATEROUS CMUC **Y/N**

The pump assembly shall be a Waterous CMUC 20 -1500GPM two-stage pump equipped with a chain-driven C20 Transmission construction and shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association.

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

The pump body shall be closed-grained gray iron and must be horizontally split in two sections for easy removal of the entire impeller shaft assembly, and designed for complete servicing from the bottom of the truck without disturbing setting of the pump in the chassis or apparatus piping, which is connected to the pump. Pump body halves shall be bolted together on a single horizontal face to minimize leakage and facilitate reassembly.

The discharge manifold shall be cast as an integral part of the pump body assembly. The manifold shall provide at least three full, 3-1/2" openings for flexibility and maximum efficiency. The outlets provided shall be one on the right side of the pump body, one on the left side of the pump body and one directly on top of the manifold.

The impellers shall be bronze with double suction inlets, accurately balanced (mechanically and hydraulically), of mixed flow design with reverse-flow, labyrinth-type, and utilize wear rings that resist water bypass and loss of efficiency due to wear.

The wear rings shall be bronze, and be easily replaceable to restore original pump efficiency and eliminate the need for replacing the entire pump casing due to wear.

The impeller shaft shall be stainless steel, accurately ground to size, and supported at each end by oil or grease-lubricated anti-friction ball bearings for rigid and precise support. Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. The impeller shaft shall be of two-piece construction separable between the pump and pump transmission to allow true separation of the transmission from the pump without disassembly of either component. No sleeve type bearings shall be used.

The transfer valve design shall be of the latest ball type, of all bronze construction and incorporate a hydraulically balanced seal assembly to minimize leakage around the ball and assure maximum pump efficiency. The transfer valve shall operate smoothly and without sticking even when exposed to sandy or dirty water.

The transfer valve actuator shall be operated electrically, by means of a control switch mounted on the operator's panel complete with two indicator lights indicating PRESSURE and VOLUME. Operation of the transfer valve shall provide smooth changing of the transfer valve to either Pressure or VOLUME without shutting down, at any discharge pressure up to 250 psig.

The pump transmission shall be rigidly attached to the pump body assembly and be of the latest design incorporating a high strength, involute, tooth-form Hy-Vo chain drive and driven sprockets

capable of operating at high speeds to provide smooth, quite transfer of power. A free sliding collar accomplishes the shift engagement and incorporates an internal locking mechanism that maintains the Road or Pump position.

For chassis equipped with automatic transmissions, the pump transmission driveline shall have a torque-rating equal to or greater than the maximum net engine torque multiplied times the first gear ratio and torque converter ratio.

The suction fittings shall include removable, die cast, zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

A 3" clapper check valve shall be installed between the suction side of the pump and the tank-to-pump valve. This 3" clapper valve shall eliminate the possibility of a pressure surge expanding the water tank.

Pump system shall utilize an integral discharge manifold system that allows a direct flow of water to all discharge valves.

The pump system and piping shall be engineered for side mount operations. The relief valve control and other control mechanisms shall be located on the side mount operator's control panel.

WATEROUS MECHANICAL SEAL **Y/N**

The midship pump shall be equipped with a spring-loaded and 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 shall be 2 inches in diameter and consist of:

- Carbon sealing ring
- Stainless steel coil spring
- Viton rubber boot
- Tungsten carbide seat, with Teflon backup seal

Only one mechanical seal shall be required, located on the first stage suction (inboard) 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 shall be directed through the seal chamber when the pump is in operation.

THERMAL RELIEF VALVE WITH LIGHT **Y/N**

The pump shall be equipped with a Waterous Overheat Protection Manager (OPM) device. The valve is preset to open at 140 degrees Fahrenheit. The OPM warning light display shall be provided on the pump panel and shall be triggered when temperatures exceeds 180 degrees.

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PUMP MOUNTING **Y/N**

There shall be extra heavy-duty pump mounting brackets furnished. These shall be bolted to the frame rails in such a position to align the pump so that the angular velocity of the driveline joints shall be the same on each end of the driveshaft. This shall assure full capacity performance with a minimum of vibration.

PUMP PANEL TAGS - COLOR CODED – METAL **Y/N**

The pump panel tags for all discharges, gauges, and controls shall be color-coded and made out of metal. All gauges and controls shall be properly identified with color-coded metal pump panel tags. The color-coded tags shall be affixed with 3M industrial adhesive.

U.L. TEST POINTS **Y/N**

An Underwriters Laboratories approved engine counter shall be located on the pump panel to provide a means to certify the tachometer. In addition, two-(2) U.L. test plugs shall be pump panel mounted for testing of vacuum and pressures.

U.L. CERTIFICATION (1500 GPM) **Y/N**

The vehicle shall be third party tested and certified by Underwriters Laboratories, Inc. UL testing is recognized as a leading, third party, "Product Safety Certification" organization for over 100 years. UL has served on the NFPA (National Fire Protection Association) technical committee for over thirty-(30) years.

The testing organization must meet the following minimum requirements:

- Must be nationally recognized testing laboratory recognized by OSHA
- Must comply with the ASTM (American Society for Testing Materials) standard E543 "Determining the qualifications for nondestructive testing agencies"
- Must have more than forty (40) years of Automotive Fire Apparatus safety testing experience and more than fifteen (15) years of factory aerial device testing and Certification experience
- Must not represent, be associated with, or in the manufacture or repair of automotive fire apparatus
- Must provide proof of ten (10) million dollars in excess liability insurance for bodily injury and properly damage combined

The pump shall meet and perform the following test to receive a U.L. Certification.

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

PUMP CERTIFICATION TEST PLATE **Y/N**

A permanently affixed plate shall be installed at the pump operator's panel. It shall provide the rated discharge and pressures together with the speed of the engine as determined by the certification test for each unit. It shall also provide the position of the parallel/series pump used and

the no load governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

A label shall be provided on the pump operator's panel that states the following:

Warning: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

6" STEAMER INLET – LEFT **Y/N**

One-(1) 6" steamer inlet shall be provided, on the left side of the pump. The inlet shall be furnished with long handle chrome cap and 6" screen and a TFT Legacy #AB1ST-NX 6" SH Female Swivel x 5" Rigid Storz Ball Intake Valve and cap.

6" STEAMER INLET - RIGHT **Y/N**

One-(1) 6" steamer inlet shall be provided, on the right side of the pump. The inlet shall be furnished with long handle chrome cap and 6" screen and a TFT Legacy #AB1ST-NX 6" SH Female Swivel x 5" Rigid Storz Ball Intake Valve and cap.

6" STEAMER INLET - FRONT **Y/N**

One-(1) 6" steamer inlet shall be provided on the front of the pumper – See Accompanying Section "Recessed Front Suction". The front suction shall be capable of suppling water so that pump can produce no less than 90% of the rated pump capacity. The front steamer inlet shall be controlled from the pump panel with an Elkhart Series 2900 valve with an electric actuator. The actuator shall be operated utilizing an Elkhart Electronic Valve Controller and the controller shall be mounted on the pump panel All piping for the front suction shall be a minimum of 5" diameter sch. 40 galvanized pipe. Where vibration or chassis flexing may cause damage or loosen piping, the pipe shall be equipped with Victaulic or roustabout couplings. All low spots in the front suction piping shall be furnished with automatic ball drip/drain valves.

2-1/2" LEFT SIDE SUCTION **Y/N**

One (1) 2-1/2" brass valve shall be installed on the left side of the pump panel. The valve shall be fixed pivot design, plumbed to the suction side of the pump with 2-1/2" piping. The control handle shall be located on the side the suction valve. The valve shall come equipped with a chrome plug, chain, brass inlet strainer, a 2-1/2" NST chrome inlet swivel and a 3/4" bleeder/drain valve.

STANDARD MASTER GAUGES **Y/N**

One-(1) 4-1/2" master suction and one (1) 4-1/2" master discharge gauge shall be pump panel mounted. These compound gauges shall be filled with a liquid silicone solution to assure visual reading to within 1% accuracy. This liquid silicone feature eliminates the need of snubber valves and reduces the chance of condensation forming on the inner face of the gauge.

FRC PRO-T Pressure Governor **Y/N**

The apparatus shall be equipped with a compact FRC PRO-T pressure governor and a PRO-T J1939 display panel. It shall maintain a steady pump discharge pressure by controlling engine speed or holds a selected engine RPM. It shall offer complete engine control and remote display in a single, compact unit. The governor shall be programed to include a high-idle function.
The high-idle shall be set to 1000 RPM at the factory.

AUTOMATIC FIRE PUMP PRIMING SYSTEM **Y/N**

A Trident Model 31.011.7 manual air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM (4,690 LPM) or more. Due to corrosion exposure no aluminum or vanes shall be used in the primer design. The primer shall be three-barrel design with ¾" NPT connection to the fire pump.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

The 12 volt primer control shall be a manual type, with a pump panel push button switch to operate an air solenoid valve. The air valve shall direct air pressure from the air brake system to the primer. To prevent freezing, no water shall enter the primer valve control.

A vacuum gauge 2" in diameter, with graduations from zero to 30 inches, shall be installed in the primer control panel. The gauge shall be physically connected to the vacuum side of the primer and read only when the primer is running so it will never see or be subject to damage from high pump intake pressures.

The automatic priming switch shall have three positions as follows:

- "Prime" – the lower position shall 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

FLOW METERS **Y/N**

There shall be ten (10) FRC INSIGHT ULTIMATE Flowmeter and Pressure Indicators with optional back lighting installed with the proper flow sensors. The flowmeter/pressure indicator shall be mounted on the pump panel to correspond with the respective push/pull "T" handle that operates the valve

Three (3) cross lays above the pump panel
Three (3) rear discharges
Both left side discharges
Both right side discharges

STANDARD GAUGES **Y/N**

All discharge outlets shall have a 2-1/2" white-faced, silicone filled pressure gauge installed on the operator's panel to indicate pressures from 0 to 600 Psi.

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STANDARD COLOR BEZELS **Y/N**

Pressure gauge bezels shall be colored and discharge specific.

SUCTION & DISCHARGE PLUMBING **Y/N**

All suction and discharge lines of 2" or larger, shall be constructed of a minimum of Schedule 40 galvanized steel pipe. Where vibration or chassis flexing may damage or loosen piping, the pipe shall be equipped with Victaulic or roustabout couplings. The entire discharge and intake piping system, valves, drain cocks and lines, intake and outlet closures excluding the tank fill and tank to pump lines on the tank side of the valves shall be designed for 500 PSIG. All suction inlets and discharge outlets shall be equipped with National Standard Threads (NST) unless otherwise stated.

2-1/2" DIRECT TANK FILL - RIGHT SIDE **Y/N**

There shall be one (1) 2-1/2" Direct Tank Fill Inlet. The inlet shall be equipped with a 2-1/2" brass valve, chrome swivel, with a chrome plug and chain provided. The valve control shall be vertically mounted on the right side pump panel alongside the valve body.

TANK TO PUMP **Y/N**

The tank to pump valve shall be 3" inline, installed between the water tank and the pump and shall be capable of a minimum 500 gallon per minute. The valve shall be a quarter turn ball type, fixed pivot design and be constructed of bronze. The control shall be a chrome push/pull locking "T" type handle and installed on the left pump panel.

MASTER DRAIN **Y/N**

The master drain shall have the capacity to drain the pump. The drain shall be recessed below the side pump panel, with the control located under the side running boards that are properly labeled. The water discharged from the drain shall be routed to drain below the chassis frame rails.

INLET RELIEF VALVE **Y/N**

There shall be an Elkhart model 40 suction side relief valve provided on the pump system. The relief valve shall be plumbed with high-pressure rubber hose, stainless steel connections and terminate within view of the operator's panel. The Valve shall be adjustable from75psi to 250psi and shall be pre-set to 150 psi.

ENGINE COOLER **Y/N**

The engine cooler shall be installed in-line from the discharge side of the pump, and installed in the engine cooling system. There shall be a 1/2", quarter turn valve installed thru the pump panel and shall be clearly labeled.

PUMP COOLER **Y/N**

The pump shall have a 3/8" line installed from the pump discharge, to the water tank to cool the pump during long periods of pumping when water is not being discharged. The pump cooler shall be controlled from the pump operators panel by a 3/8" valve consisting of a cast bronze body with

1/4 turn chrome plated bronze ball, reinforced Teflon seals, and blow-out-proof stem rated to 600 PSI.

The valve shall be installed thru the pump panel and clearly labeled.

PUMP SHIFT **Y/N**

An air operated pump shift shall be installed in the chassis cab to engage the fire pump. Provisions shall be made for placing the pump drive system in operation using controls and switches that are clearly identified and within convenient reach of the operator while in the cab.

A green indicator light shall be installed on the cab dash and labeled "Pump Engaged."

Where an automatic chassis transmission is provided, a green indicator light in the driving compartment and a green indicator light located at the pump operator's position shall be provided and shall be energized when both the pump shift has been completed and the chassis transmission is engaged in pump gear.

The light in the driving compartment shall be labeled "OK to pump". The light on the pump operator shall be positioned adjacent to and preferably above the throttle control and shall be labeled "Warning": DO NOT OPEN THROTTLE UNLESS LIGHT IS ON." The green light on the pump operator panel shall be energized when the pump is engaged, the transmission is in the drive position, and the parking brake is set.

A secondary manually operated pump shift shall be provided on the pump panel.

PUMP COMPARTMENT ACCESS - FRONT OF APPARATUS BODY **Y/N**

There shall be access panels provided on both sides of the vehicle at the front of the body for access to the pump compartment. The access panels shall be equipped with access doors and shall be manufactured and finished to match the surrounding panels.

SEPARATE PUMP MODULE **Y/N**

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be constructed entirely of extrusions plate and shall be bolted to the chassis frame rails. The pump module design must allow normal frame deflection without imposing stress on the pump module structure or side running boards.

TANK FILL **Y/N**

There shall be a 2" pump to tank fill line installed, with a 2" inline bronze valve, a 2" high-pressure flexible hose and tested to 1200 PSI. The valve shall be controlled at the side pump panel with a chrome push/pull locking "T" handle.

1-3/4" FRONT JUMP LINE **Y/N**

There shall be a 1-3/4" front jump line installed at the front bumper and it shall be capable of flows up to 250 GPM. A 2" inline valve shall be controlled at the side pump panel with a chrome push/pull locking "T" handle. The plumbing shall be 2” sch. 40 steel pipe and/or 2” flexible high-pressure hose, tested to 1200 PSI, using stainless steel couplings. There shall be a 2" NPT x 1-1/2" NST

elbow and an Akron Brass Model 2580 gated wye. All low points shall be equipped with automatic drains to prevent freezing.
A tread plate swivel stop shall be installed on the front bumper to ensure that hose does not scuff the cab front.

CROSS LAYS **Y/N**

There shall be (3) three cross lays located over the pump panel. All cross lays compartments shall be wide enough to accommodate the appropriate hose loads and shall be packed from the top. The cross lays compartments shall be open on the top and shall be of sufficient width to allow the hose load to be flat packed double width. The cross lays shall be separately operated by a bronze inline 2-1/2" valve with a chrome plated, push-pull, locking T-handle mounted on the pump panel. The discharge shall come equipped with a quarter turn, 3/4" drain valve.

There will be (2) two double-width cross lays located over the pump panel each capable of holding 200' of 1 ¾" hose.

There will be (1) one double-width cross lay located over the pump panel each capable of holding 200' of 2 ½" hose.

2-1/2" RIGHT REAR DISCHARGE **Y/N**

A 2-1/2" right rear discharge shall be provided using 2-1/2" pipe and shall be equipped with an ¼ turn lever handle Elkhart Series 800 valve with a 45° chrome 2-1/2 M NST outlet, a 2 ½"x 1 ½" chrome reducer and a chrome cap with chain. The rear discharge shall be operated by separate bronze inline 2-1/2" valve with a chrome plated, push-pull, locking T-handle mounted on the pump panel. The discharge shall come equipped with a quarter turn, 3/4" drain valve.

2-1/2" LEFT REAR DISCHARGE **Y/N**

A 2-1/2" right rear discharge shall be provided using 2-1/2" pipe and shall be equipped with a ¼ turn lever handle Elkhart Series 800 valve with a 45° chrome 2-1/2 M NST outlet, a 2 ½"x 1 ½" chrome reducer and a chrome cap with chain. The rear discharge shall be operated by a bronze inline 2-1/2" valve with a chrome plated, push-pull, locking T-handle mounted on the pump panel. The discharge shall come equipped with a quarter turn, 3/4" drain valve.

2-1/2" LEFT SIDE DISCHARGES **Y/N**

Two 2-1/2" discharges shall be provided using 2-1/2" pipe and shall be equipped with a 30° chrome 2-1/2 M NST outlet, a 2 ½"x 1 ½" chrome reducer and a chrome cap with chain. The valves shall be controlled by a chrome plated, push-pull, locking T-handles on the operator's panel. The discharges shall also come equipped with a quarter-turn; 3/4" drain valves.

2-1/2" RIGHT SIDE DISCHARGE **Y/N**

A 2-1/2" 2-1/2" discharge shall be provided using 2-1/2" pipe and shall be equipped with a 30° chrome 2-1/2 M NST outlet, a 2 ½"x 1 ½" chrome reducer and a chrome cap with chain. The valve shall be controlled by a chrome plated, push/pull, locking "T" handle on the operator panel. The discharge shall come equipped with a quarter-turn, 3/4" drain valve.

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3 1/2" RIGHT SIDE DISCHARGE **Y/N**

A 3.5” discharge shall be located on the right side panel and shall be controlled from the pump panel with an Elkhart Series 2900 with an electric actuator. The actuator shall be operated utilizing an Elkhart Electronic Valve Controller and the controller shall be mounted on the pump panel. The discharge shall be equipped with a one (1) Kochek model S54L5T3 5" Swivel Storz x 3.5" Female RL Swivel NH, one (1) 3.5” 30° chrome elbow and one (1) Kochek model 5" CC507 cap with chain.
The threads on the valve shall be 3.5" MNST, with a chrome cap and chain supplied. The valve shall be mounted behind the pump panel and shall come equipped with a quarter-turn, 3/4" drain valve.

TOP MOUNTED DISCHARGE **Y/N**

One top mounted discharge riser shall be provided for deck gun mounting in the storage area above the pump. The discharge riser piping shall terminate with a 3” Akron Brass model 8630 wheel handle operated outlet valve which shall be compatible with the deck gun specified. The riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The discharge riser shall be controlled from the pump panel with an Elkhart Series 2900 valve with an electric actuator. The actuator shall be operated utilizing an Elkhart Electronic Valve Controller and the controller shall be mounted on the pump panel and shall come equipped with a quarter-turn, 3/4" drain valve.

TANK VISION GAUGE PUMP PANEL **Y/N**

The water level gauge shall be a Tank Vision Model Pro 400, with super bright LED's to show the tank volume. The display shall use a two-dimensional, two-element lens to refract the light from the LED's and to provide full 180-degree visibility for the level indications. The gauge shall use a pressure transducer installed near the bottom of the water tank to determine the correct volume in the tank.

TANK VISION GAUGE CAB MOUNT **Y/N**

(2) Two Maxvision LED Tank Displays, Model WLA280-A00 shall be provided. One display shall be mounted on the driver’s side of cab behind the rear crew door and one display shall be mounted on the officer’s side of cab behind the rear crew door.

BOOSTER TANK – POLYPROPYLENE **Y/N**

The booster tank shall be a UPF POLY TANK and shall have a capacity of 500 U.S. Gallons complete with a Lifetime Warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the markings and notice is to inform department personnel who store, stock, or use the tank that the unit is under warranty. The markings indicate the substance and duration of the warranty. It also includes whom to notify if the tank is found to be defective.

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CONSTRUCTION

The tank shall be shaped so that the rear hose bed is as low as possible and constructed of 1/2" thick polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermoplastic, natural in color and UV stabilized for maximum protection.

The booster tank shall be of a specified configuration and is designed to be completely independent of the body and compartments. All joints and seams are nitrogen welded and tested for maximum strength. The top of the tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removable. The transverse swash partitions shall be manufactured of 3/8" polypropylene and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" polypropylene and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are welded to each other as well as to the walls of the tank.

FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter. The tower shall be located so it will not interfere with the operation of the cover of the hose bed or the deck gun. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top shall be fastened a combination vent / overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum ID of 4" that is designed to run through the tank, and shall be piped behind the rear wheels to maximize traction.

The tank cover shall be constructed of 1/2" thick polypropylene, and UV stabilized, to incorporate a multi three-piece locking design, which allows for individual removal and inspection if necessary. The tank cover shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum rigidity. Each one of the covers shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two (2) lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

SUMP

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

OUTLETS

There shall be a minimum of two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be a minimum of 3" NPT coupling; and, one for a tank fill line, which shall be a minimum of 1" NPT coupling. All tank fill couplings shall be backed with flow deflectors to break up

the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet all NFPA 1900 guidelines in effect at the time of manufacture.

MOUNTING

The tank shall 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. 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 must be isolated from the cross members through the use of hard rubber strips with, a minimum thickness and width dimension of .250" x 2" and a minimum Rockwell Hardness of 60 durometer. The tank shall be captured front and rear as well as side-to-side to prevent the tank from shifting during vehicle operation. The tank shall sit cradle mounted using four (4) corner angles of 4" x 4" x .250" thickness x 6" high welded directly to the body cross members. The entire perimeter of the bottom of the tank shall be supported. Although the tank is designed on the free-floating suspension principle, it shall be required that the tank have hold down restraints to minimize movement during vehicle operation. These restraints shall be mounted to the side walls of the hose bed and extend down so that they rest approximately 1/2" above the top of the tank. The foot of the restraint does not directly contact the top of the tank. Hose bed floors shall be designed so that the floor slat supports extend the full width of the hose body. The floor is not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where punctures may occur. The flooring shall be capable of supporting up to 200 lbs. per square foot and shall be evenly distributed whenever possible. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

All tank support cross members and support shall be constructed from stainless steel.

12 VOLT OUTLET IN COMPARTMENTS **Y/N**

Six (6) 12 volt power plug receptacle(s) and covers shall be provided and shall be wired battery direct. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

The receptacle(s) shall be located as follows:

- One (1) 12v power point to be located in compartment L-2 and L-3.
- 12v power point to be located in compartment R-1 and R-3.
- One (1) 12v power point to be located in both EMS compartment.
- Final location to be discussed at preconstruction meeting.

120 VOLT SHORE POWER OUTLET IN COMPARTMENTS **Y/N**

A 120-volt, 20 amp, 3-wire receptacle from a shore power source shall be provided inside six (6) body compartments in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shore power inlet and labeled accordingly.

The receptacle(s) shall be located as follows:

- One (1) 120v power point to be located in compartment L-2 and L3.
- One (1) 120v power point to be located in compartment R-1 and R-3.
- One (1) 120v power point to be located in both EMS compartment.
- Final location to be discussed at preconstruction meeting.

LEFT SIDE COMPARTMENTS **Y/N**

The left side compartments shall consist of three (3) compartments, two (2) with AMDOR roll up doors and one (1) with a top hinged door.

A full height, rollup door compartment (L1) ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 34.50" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 28.75" wide x 56.88" high.

A top hinged compartment (L2) over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening shall be a minimum of 58.25" wide x 23.13" high.

A full height, rollup door compartment (L3) behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 31.75" wide x 67.63" high x 12.00" deep. A section of this compartment shall be 25.88" deep for the first 31.75" width x 26.00" height directly behind the rear wheels. The clear door opening shall be a minimum of 28.75" wide x 57.88" high.

The interior height of the compartments shall be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments shall be measured from the back wall to the inside of the door frame.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

There shall be a drip rail above each compartment door.

CENTER REAR COMPARTMENTS **Y/N**

There shall be one (1) compartment installed at the center rear of the apparatus under the hose bed. This compartment shall have one (1) AMDOR rollup door. The compartment shall be approximately 41"W x 33.63"H x as large as possible deep. The compartment shall have a useable door opening of approximately 37"W x 28"H. The 6” steamer inlet shall terminate in this compartment and shall be mounted in the area of the upper left hand corner of the compartment. The final location of the steamer inlet shall be determination at the pre-construction conference.

RIGHT SIDE COMPARTMENTS **Y/N**

The right side compartments shall consist of two (2) compartments with AMDOR rollup doors.

A rollup door compartment (R1) ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 34.50" wide x 32.62" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 28.75" wide x 22.88" high.

A rollup door compartment (R3) behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 31.75" wide x 33.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 28.75" wide x 23.88" high.

The interior height of the compartments shall be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments shall be measured from the back wall to the inside of the door frame.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

There shall be a drip rail above each compartment door.

ADJUSTABLE SHELVES W/TRACK **Y/N**

There shall be four (4) full depth adjustable shelves shall be fabricated from .1875 smooth aluminum. Adjustable track shall be made from aluminum extrusions and run the full height of the compartment. Each shelf shall have a 2" lip on all sides for added strength. Shelves shall be in compartments L1 & L3 and R1 & R3.

There shall be four (4) “short” depth adjustable shelves shall be made from .1875 smooth aluminum. Adjustable track shall be fabricated from aluminum extrusions and run the full height of the compartment. Each shelf shall have a 2" lip on all sides for added strength. Shelves shall be in compartments L1 & L3.

ROLL-OUT TRAYS **Y/N**

There shall be two (2) 500 lbs. rated roll-out trays, fabricated from 3/16" (.1875") smooth aluminum plate. The tray(s) shall have a 3" lip at the front and rear for added strength and mounted on Grant slides with a combined capacity of 500 pounds. The trays shall be mounted in compartments L3 and R3. An easy to operate tray lock shall be provided.

PAC-TRAC MOUNTING SURFACE **Y/N**

Pac-Trac aluminum mounting surface shall be installed on the rear wall of the top upper portion of compartment L1.

PAC Tools PM-1000 pivot assembly with right hand opening shall be mounted in compartment L2.
PAC Tools PM7040 – measurement to fit in compartment L2.

RUNNING BOARDS **Y/N**

All running board and step surfaces shall be in compliant with the current version of NFPA 1901.

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PUMP PANEL **Y/N**

The operator's controls and gauges shall be mounted on a pump panel constructed of .125" aluminum. The panel shall be sprayed with Line-X having a high resistance to abrasion and tearing. A vinyl cloth glued or laminated in some manner to a metal backing surface shall not be acceptable. The Line-X shall absorb impact without surface damage. The Line-X shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties. The Line-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds The operator's master gauge panel shall have a vertical stainless steel hinge installed at the left side of the panel with a latch at the right to provide access to the gauges for servicing.

The upper portion of the right side pump panel shall have hinged double doors for access to the pump compartment. The doors shall be constructed of .125" aluminum tread plate.

The following controls and instruments shall be provided and installed as a group at the pump panel. The central midpoint or centerline of any valve control shall be no more than 72" vertically above the ground or platform that is designed to serve as the operator's standing position. These instruments shall be placed to keep the pump operator as far as practical from all discharge and intake connections and in a location where they are readily visible and operationally functional while the operator remains stationary.

1. Master intake pressure-indicating device
2. Master discharge pressure-indicating device
3. Tachometer (PRO-T J1939 display panel)
4. Engine (coolant) temperature indicator (PRO-T J1939 display panel)
5. Engine oil pressure indicator (PRO-T J1939 display panel)
6. Voltmeter (PRO-T J1939 display panel)
7. Pump pressure controls (PRO-T J1939 display panel)
8. Emergency pump engagement control
9. Primer control
10. Tank to pump control
11. Tank Fill control
12. Water level indicator

VERTICAL LOAD TEST- BODY **Y/N**

The fire body shall exceed a vertical load testing. The vertical load test to the fire body shall follow the same strict and detailed requirements of the Economic Commission for Europe Structural Standard, ECE-29R as applied to the cab.

The fire body shall be placed under a vertical load test to show structural integrity. There shall be 65,979 lbs. (29.53 metric tons) applied to the fire body. There shall be no structure failures to the body and body compartments.

A complete photographic, video, data, and dimensional record of these tests shall be available and placed on record for customer evaluations.

BLACK POLYETHYLENE RUBRAIL **Y/N**

There shall be black plastic/polyethylene rub rails installed on both sides of the lower body compartments. The rub rail shall be spaced .50" from the body and shall be securely bolted in place with stainless steel bolts which shall be recessed to provide a smooth finish. The solid rub rail shall serve as protection to the side doors when encountering close objects.

SLOTTED RUNNING BOARDS **Y/N**

The running boards shall be constructed from an anodized aluminum extrusion. This extrusion shall be slotted punched and raised to provide superior traction during wet and cold weather operations. Each running board shall bolt on with stainless steel nuts and bolts for removal and replacement. The running boards shall have a 1/4" space from the side of the body to allow run off of water and debris.

HOSE WELLS IN RUNNING BOARDS – PUMP PANEL **Y/N**

Hose wells shall be furnished in both the sides of the pump panel running boards. The hose wells shall be constructed of material similar to the running boards and shall be furnished with an anodized aluminum extrusion bottom. Hose wells shall be large enough to accommodate a 25' section of 5" supply hose and shall have a restraining strap with quick release buckle to secure hose in the hose well.

SLOTTED REAR STEP **Y/N**

The rear step shall be constructed with an anodized aluminum extrusion and shall be 18" deep with angled corners. This extrusion shall be slotted punched and raised to provide superior traction during wet and cold weather operations. The rear step shall be a two-piece design. Each section of the rear step shall bolt on with stainless steel nuts and bolts for replacement. The rear step shall have a space of approximately 1/4" from the rear of the body to allow water runoff. The rear step width will be maximized for safety but must remain within the maximum length requirement of the vehicle

All running board and step surfaces shall comply with NFPA 1901.

HOSE BED ACCESS STEPS – REAR **Y/N**

Three (3) large folding steps shall be mounted on each side of the rear compartment with a max. static load test of 1000 lbs. Steps shall be mounted with four (4) bolts or studs with a gasket and shall have a Cadmium Plated Finish. All steps shall conform to NFPA 1901 standards.

TecNiq model EON, LED step lights shall be provided to illuminate each step and shall be controlled by a switch mounded next to the lower step. Switch shall be labeled "STEP LIGHTS".

LADDERS & PIKE POLES STORAGE **Y/N**

CPI model FA3345 or equal carrying brackets with spring loaded handles to secure (1) 24ft. extension ladder and one (1) 14 ft. roof ladder shall be installed on the right side of the vehicle over the low side compartments.

Between the ladder mount and the outside of the hose bed, mounting brackets or tubes for two (2) FDNY style 6ft. roof hooks and one (1) 8ft. pike pole shall be provided.

Above the roof hooks/pike pole storage for one (1) folding ladder shall be provided.

UNDER LADDER HOSE TRAY **Y/N**

A hose tray shall be provided and mounted under the ground ladders and above compartments R1 & R3. It shall be capable of holding two (2) 100' 1 ¾" Hi-Rise packs stacked end to end and one (1) standpipe bag. Six (6) nylon seatbelt style straps shall be provided.

WHEEL WELL AIR BOTTLE/EXTINGUISHER COMPARTMENT **Y/N**

There shall be three (3) air bottle storage compartment and one (1) extinguisher storage compartment located in the rear wheel well area. The compartments shall be capable of storing six (6) spare air bottles and two extinguisher combined. The bottom is to be supported to eliminate breakage from vibration, and is to be vented to facilitate moisture drainage. The compartment door shall be constructed of diamond plate with a positive mechanical latch. The bottom of the compartment shall be lined with a material to protect the air bottle and extinguisher finish.

BODY TRIM **Y/N**

The standard body trim shall include the following:

There shall be treadplate installed over all side compartment tops to provide a drip rail over the compartment door openings.

A drip rail shall be located over each compartment door. This drip rail shall form a lip over the exterior door pans to prevent water from running into a compartment.

The vertical rear face of the body shall be covered with treadplate.

Two (2) handrails shall be located on the rear beavertails; one handrail per beavertail. Each shall be extruded polished aluminum tube with rubber inserts providing maximum gripping ability with chrome end stanchions. Each handrail shall be sufficient in length to meet all standard requirements.

Two (2) stanchions shall be mounted at the rear of the apparatus hose bed, one (1) each side. The stanchions shall be 11"L x 3.75"W and manufactured out of polished cast aluminum. Stainless steel scuff plates shall be installed in the hose bed area to prevent deploying hose from damaged on stanchion supports. The stanchions shall provide mounting positions for the Zone C warning lights and additional hose bed lighting. All wiring for the upper rear lighting shall be concealed inside the stanchions.

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FUEL FILL- RECESSED WITHOUT DOOR **Y/N**

There shall be a cast aluminum recessed fuel fill assembly mounted on the left side of the apparatus body. The fuel fill assembly shall be equipped with a fuel fill cap and retention ring. The assembly shall be properly labeled "DIESEL FUEL ONLY".

HANDRAIL ABOVE THE PUMP PANEL **Y/N**

There shall be a handrail mounted above the left and right of side pump panel, for access to the deck gun and upper storage area. The handles shall be as long as possible and shall be extruded polished aluminum tube with rubber inserts providing maximum gripping ability

UPPER STORAGE/DECK GUN ACCESS **Y/N**

Four (4) large folding steps with a max. static load test of 1000 lbs. each shall be mounted on the forward side of compartment L-1 next to the pump panel for upper storage/deck gun access. Steps shall be mounted with four (4) bolts or studs with a gasket and shall have a Cadmium Plated Finish. All steps shall conform to NFPA 1901 standards.

TecNiq model EON, LED step lights shall be provided to illuminate each step and shall be controlled by a switch mounded next to the lower step. Switch shall be labeled “STEP LIGHTS”.

INTERMEDIATE HANDRAIL-REAR **Y/N**

There shall be an intermediate handrail supplied and installed on the apparatus. The handrail shall be extruded polished aluminum tube with rubber inserts providing maximum gripping ability. The handrail shall be mounted below the hose bed and above the center rear compartment.

HOSE BED COVER **Y/N**

A roll-up hose bed cover shall be installed. It shall roll forward out of the way of the hose bed for easier hose loading at the top of the truck. The solid cover shall protect the hose from all elements, it shall secure the hose load in place and shall provide an NFPA-compliant walking surface above the hose. The roll-up hose bed cover shall not add to overall height of the vehicle.

HOSE BED DIVIDERS **Y/N**

Two (2) full height aluminum hose bed dividers shall be provided and shall have an extruded track to slide in to allow the hose bed to adjust for different hose capacities. One end of the divider shall have a 3" radius corner. The divider shall be sanded to prevent damage to hose.

HOSE BED CAPACITY **Y/N**

The hose bed shall have the capacity to hold a minimum of the following:

1500’ 5” large diameter hose
400’ 2.1/2” double jacket hose
400’ 2.1/2” double jacket hose
400’ 1 ¾”” double jacket hose

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BODY ELECTRICAL SYSTEM **Y/N**

The body electrical system shall be designed as a hard-wired integrated electrical package specifically engineered for fire apparatus application. The integrated electrical system shall be comprised of central power distribution panels, which interface with the body and chassis through an engineered harness system.

CIRCUIT IDENTIFICATION **Y/N**

All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently identified by circuit number at all terminations.

DISTRIBUTION PANELS **Y/N**

The electrical distribution panels and circuits must be housed in each rear corner compartment or extrusion. The distribution panel shall incorporate a power and ground stud for connection to the internal circuits.

All internal wire end terminals, including locking bulkhead connectors, shall be mechanically affixed to the wire ends by machine terminal crimping presses. No hand-crimped terminals shall be acceptable.

All internal splices shall be ultrasonically welded connections - no butt style connections shall be acceptable. All internal wiring shall be of the high temperature GXL type wire and shall be protected by wiring duct wherever possible.

Each side electrical distribution panel shall consist of fifteen - (15) power distribution relays. The power distribution relays shall be replaceable, SPDT automotive style, rated at a minimum of 30 amperes.

The power distribution relays shall incorporate separate inputs, which are able to accept outputs from a load management system. The load management inputs must allow for the addition of a load management system before, during, or after the time of delivery without requiring a rewiring of the existing distribution panel circuits.

Connections to the distribution panel shall utilize Deutsch style bulkhead connectors. Screw clamp type connections are not acceptable.

The distribution panel shall also contain circuit's ancillary to the required DOT signals and other body functions.

The complete body electrical system shall be 100% documented and contain independent circuit diagrams with point to point wiring information, as shall as a general component diagram included in the apparatus manual.

The body electrical panel shall be capable of being completely disconnected and fully tested by a computerized circuit analyzer.

All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the driver. Light switches shall be of the marine grade rocker type with integral indicator light to show when lights are energized. All switches shall be appropriately identified.

SPARE WIRES **Y/N**

Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system. The end of spare wires shall be sealed from possible weather contamination.

VOLT TESTING **Y/N**

The apparatus low voltage system shall be tested and certified. A copy of certification shall be provided to the purchaser with the apparatus.

RESERVE CAPACITY TEST **Y/N**

The unit shall be run until all engines, engine compartment temperatures are stabilized, and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load be activated for ten-(10) minutes. All electrical loads shall be shutoff after ten-(10) minutes and the battery system shall then be capable of restarting the engine.

ALTERNATOR PERFORMANCE TEST AT IDLE **Y/N**

Minimum continuous electrical loads shall be activated while the unit is at idle speed.

ALTERNATOR PERFORMANCE TEST AT FULL LOAD **Y/N**

The total continuous electrical load shall be activated with the engine running up to the manufacturer's governed speed. The test duration shall be a minimum of two-(2) hours. Activation of the load management system shall be permitted during the test. If however, an alarm is sounded by excessive battery discharge as detected by the system or a system voltage of less than 11.8 volts DC for a 12-volt nominal system for more than 120 seconds, shall be considered a test failure.

LOW VOLTAGE ALARM TEST **Y/N**

The engine shall be shut off and the total continuous electrical load shall be activated and continue to be applied until the excessive battery discharge alarm activates. The test shall be considered a failure if the alarm has not sounded within 140 seconds after the voltage drops to 11.8 volts.

EMI/RFI PROTECTION

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

The apparatus shall have the ability to operate in typical fire and rescue situations with no adverse effects from EMI and/or RFI.

The apparatus shall utilize components that are fully protected and wiring that utilizes shielding and loop backgrounds where required to control EMI/RFI susceptibility. The apparatus shall be bonded through ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode and/or resistor protected to prevent transient voltage spikes.

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

APPARATUS GROUND BONDING **Y/N**

A 2/0 AWG cable shall connect the battery negative buss bar to the chassis frame. The cab, pump enclosure (if furnished), and body structure shall be electrically bonded to the vehicle frame by with two (2) 2 AWG braided copper ground strap.

PUMP PANEL LIGHTS LED **Y/N**

Three (3) individual Whelen LED Strip Lights, Model PSC00FCR light fixtures with on/off switch shall be mounted under a polished aluminum light shield extrusion. The lights shall be mounted at the upper portion of the pump panel to give the best light for night operations. The switch shall be located on the operator's panel for easy access.

PUMP PANEL LIGHT - PUMP ACTIVATED **Y/N**

There shall be one (1) pump panel light activated when the pump is switched into the pump position.

EMERGENCY LIGHTING PACKAGE **Y/N**

The fully compliant NFPA lighting package is a combination of Super LED lights. This package meets all zone requirements of NFPA 1901 standards.

Supply and install two (2) Whelen model FNMINI 24” light bars, mounted on the cab roof over the rear doors, facing outwards to the sides. Each light bar consists of two (2) 4” X 3” linear LED heads with one (1) clear LED located in the center forward facing and one (1) red LED to the outside facing side. Light bar shall also be equipped with two (2) red corner linear LED lights in the front corners.

Supply and install one (1) 72” Whelen light bar model FN72VLED to be mounted on the cab roof as far forward as possible. The inboard, forward facing section of the light bar shall consist of eight (8) 4” X 3” red linear LED light heads. Red linear LED light heads shall be installed in each corner of the light bar. One (1) linear LED light head shall be located on each end of the light bar facing the side of the cab.

A GGT LED emitter assembly shall be installed in the front center section of the light bar. The flash rate for the emitter shall be provided by the fire department and it shall not operate when the parking brake is applied.

Ten (10) Whelen model C6RSC 600 red LED light heads shall be mounted in Whelen Model C6FB Optional Black flange shall be installed on the apparatus as directed by the fire department. Four (4) over the headlights (two each side). One (1) each side of extended bumper. One (1) each side over wheel well on cab. One (1) each side of body over wheel well.

Four (4) Whelen model C6RSC 600 red LED warning lights with Whelen Model C6FB Optional Black Flange shall be installed on the apparatus as directed by the fire department in the rear of apparatus.

Two (2) Federal Signal Model ME4QLC-A 9" 9" MicroEscape Beacon with Clear Domes and (4) Amber LED reflectors shall be installed on the upper rear corner of the vehicle.

The headlights will be set-up with an alternating flasher that will have a switch mounted on the switch panel to disable and will also be automatically disabled when the vehicle is placed in park.

MARS 888 FRONT WARNING LIGHTS **Y/N**

Two (2) Mars Model 888 Oscillating Figure "8" TB8-L1 warning LED lights with polished stainless steel "cone" style housings shall be provided. One light shall be mounted on a pedestal at each front corner of cab cowl. Mounting bracket assembly shall be fabricated of formed 12 gauge and 1/4" thick steel which has been welded together, edges and welds ground smooth and polished. It shall be securely mounted to the tubular framing of the cab just below the windshield outer corners. The Mars Model 888 shall be furnished with one (1) Red lens and one (1) Clear lens.

CAB FRONT BROW MOUNT SCENELIGHT **Y/N**

One (1) FRC FCA800-D30 Die-cast aluminum black powder coated Brow Light mounted in a FOCUS Contour black power coated Low Profile Bracket shall be installed on the cab front brow. The brow mount shall be adjustable to 15 degrees downward angle and shall be controlled by a separate switch in the cab. Location of the control switch shall be determined at preconstruction meeting.

CAB SPOTLIGHT **Y/N**

One (1) black Golight, model 2020, shall be mounted to the roof of the cab. Light shall be battery switched. Location of the light and the control switch shall be determined at preconstruction meeting.

TELESCOPING POLE LIGHTS **Y/N**

Two (2) Fire Research Spectra LED Scene Lights model SPA100-Q20 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom.

The lamp head shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12 volts DC, draw 18 amps, and generate 20,000 lumens of light. The lamp head shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall be no more than 5 3/8" high by 14" wide by 3 3/4" deep and have a heat resistant handle. The lamp head and mounting arm shall be powder coated black. The LED scene light shall be for fire service use.

The Fire Research Spectra LED Scene Lights shall be mounted on Model SPASB500 SPECTRA LED Kwik-Raze Side Mount/Push Up Pole and shall have a powder coated black finish.

The Side Mount Push-Up pole shall have a standard outer tube length of 24" and the inner pole is 67 1/2". The pole is raised from the bottom by pushing up with the knurled aluminum handle and shall be mounted on the back of the crew cab.

A remote switch shall be mounted on the side of the vehicle and shall be reachable from the ground. The lights shall be controlled by the scene light switch in the cab.

Exact Location of the light and remote switch to be determined at preconstruction meeting.

A cab indicator light is required to warn of lights in the raised position when the parking brake is released.

GROUND LIGHTS **Y/N**

Four (4) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the cab, per NFPA requirements.
Four (4) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the body, per NFPA requirements.

CAB MOUNTED RECESSED SCENE LIGHTS **Y/N**

Two (2) FRC FCA800-D30 Die-cast aluminum black powder coated Brow Light mounted in a FOCUS Contour black power coated Recessed Mounted Flanges.

The FRC FCA800-D30 recessed cab mount shall be located over the access doors and shall be oriented for lighting at a 15 degree downward angle and shall be controlled by a separate switch in the cab. Location of the control switch shall be determined at preconstruction meeting.

REAR MOUNTED SCENE LIGHT **Y/N**

A Fire Research Evolution II LED model FCA580-V11 side mount fixed pedestal light shall be installed on the upper rear area of compartment L3. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head and mounting arm shall be powder coated black.

A remote switch shall be mounted on the rear of the vehicle and shall be reachable from the ground. The light shall be controlled by the scene light switch.

Exact Location of the light and remote switch to be determined at preconstruction meeting.

CLEARANCE LIGHTS AND REFLECTORS – LED **Y/N**

LED clearance lights and reflectors shall include (2) red marker lights, (4) red rectangular reflectors, (2) amber rectangular reflectors and (1) red three light cluster recessed in the rear step.

WHELEN STOP, TURN (LED) AND BACK-UP LED LIGHTS **Y/N**

Stop, turn, and backup lights shall be Whelen C6 Series, individual fixtures. Fixtures shall be mounted on each rear face of the body recessed in model C6FB Optional Black flange. The red stop (LED) light shall be model C6BTTC, turn light shall be a model C6TC amber (LED) type with directional arrow, and the backup light shall be model C6BU clear LED light type.

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SIDE DIRECTIONAL LIGHTS **Y/N**

Britax model #L428, short rubber side LED directional lights shall be provided in addition to the front turn signals. One (1) light shall be mounted just above the front fender on each side of the cab. Lamp shall have an amber plastic lens at front and a red lens facing rear.

REAR MARKER LIGHTS **Y/N**

A Britax long stemmed "LED" dual faced #427 marker light shall be placed at each rear corner of the body. The front lens shall be amber; the rear lens shall be red.

LICENSE PLATE LIGHT **Y/N**

A Black Chrome license plate bracket and light shall be installed on the rear of the vehicle.

STEP LIGHTS **Y/N**

Eight (8) TecNiq model EON, LED step lights shall be provided, two (2) at each cab entrance door. They shall be mounted one (1) above and one (1) below each intermediate step. Step lights shall be activated with the cab door open switch.

The cab ground and step lights shall be activated with the cab door open switch.

PUMP COMPARTMENT LIGHT – LED **Y/N**

There shall be two (2) Whelen LED Stick Light Level 3 intensity with six (6) clear super LED compartment light. One light shall be installed on each side to illuminate the pump area for service and shall have a separate switch.

COMPARTMENT LIGHTS **Y/N**

All compartments shall have two (2) full length top to bottom Access Series LED lighting series 730 by “On Scene Solutions” installed. The lights shall provide 400 Lumens of light per 18″ length and shall be activated by the door ajar switch for each cabinet.

DOOR AJAR SYSTEM **Y/N**

All apparatus body doors shall be provided with an auto door switch. These switches shall operate the compartment interior lights and activate the door ajar indicator on each side of apparatus body when the door is opened. There shall be a red door ajar light mounted in the cab, in view of the driver to indicate an unsecured door. There shall be a buzzer mounted in the cab that shall alert the driver. A buzzer override/silence switch shall be provided.

BACK UP ALARM **Y/N**

There shall be an Ecco model SA-907 "Smart Alarm" automatic electric backup alarm provided with the apparatus. It shall be wired to the back-up light circuit and mounted under the rear of the apparatus body.

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REAR TRAFFIC ADVISOR BOARD **Y/N**

A Whelen LINZ6 MODEL TAZ86 Super-LED Traffic Advisor Board shall be recessed mounted on the rear of the vehicle below the intermediate handrail and above the rear compartment. The recessed area shall also be large enough to accommodate the rear view camera.

A Whelen TACTL5 Control Head will be mounted in the cab so that it can be reached by both the driver and front seat officer.

PAINT - BODY PAINT FINISH **Y/N**

The body shall be painted a single RED color.

The body exterior shall have no mounted components including doors and glass prior to painting to assure full coverage of metal treatments. Box pan compartment doors shall be painted separately to assure proper paint coverage on body, door jambs, and door edges.

All painted surfaces shall follow the following procedure to insure a lasting finish:

- Metal surfaces shall be sanded to remove all burrs and imperfections, before etching and treatment.

- A wax & grease solvent shall be used to clean and prep the surface. The surface shall then be rinsed with fresh water. This step removes wax, grease and other surface contaminants, thus leaving a bright, clean, and conditioned surface.

- A self-etching, metal primer shall be applied next. The self-etching primer shall fill all of the minor imperfections, scratches, etc. In the metal. This step produces a corrosion resisting conversion coating that prevents off oxidation and other surface contaminants leaving a surface that gives excellent paint adhesion.

- A sandable primer shall be sprayed on the metal that seals the surface for the polyurethane paint. A minimum coating thickness of 2 MIL shall be applied. Primer is then sanded smooth leaving the best surface for top coat.

- The apparatus body shall then be painted with a minimum of three-(3) coats of color, then a minimum of three coats of high luster final finish polyurethane clear.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

SPECIAL PAINT COLOR – BODY **Y/N**

The customer shall specify the exact paint color and number for the completed apparatus body. The paint color shall then be cross-referenced to a DuPont number. The apparatus body shall then be painted as described in the paint section with this color.

ADDITIONAL PAINTING REQUIREMENTS **Y/N**

The following items shall have an additional coat of gloss black paint applied over the primed surface as supplied by the component manufacturer. Single coat application process shall be used to apply Gloss Black direct gloss paint on the parts identified below:

- Chassis frame rails, cross members.
- Front bumper extension.
- Front & rear axles and suspension.
- Battery boxes
- Fuel tank and fill tube
- Air reservoir tanks
- Pump module mounting brackets
- Body mounting brackets
- Steering gear box and steering link arm
- Drive shafts
- Front suction (when furnished)

The following items will be furnished with the finish as provided by their respective manufacturer.

- Engine, transmission and accessories
- Exhaust system
- Retarder (when furnished)
- PTO & hydraulic pump (when furnished)
- Cab lift cylinders & hydraulic pump
- Shock absorbers.
- Fuel filter
- Air drier and air cleaner
- Electrical wiring and loom
- Air brake lines, valves and mounting brackets

The air system piping and electrical harnesses shall not be installed until after the painted has cured. This shall insure complete coverage behind those items as well as to ensure that air piping and wiring harnesses are not contaminated with paint and shall be easily identifiable.

UNDERCOATING **Y/N**

The apparatus shall be properly undercoated with PPG Corashield or approved equal.

The underside of the vehicle, including body and cab, shall receive a spray-on application of black Corashield which is a heavy duty, pliable, waterborne, zero-VOC product with excellent resistance to chipping, cracking and corrosion. It shall also have excellent soundproofing qualities. The material shall be sag resistant and applied to a mil thickness of 5 to 10 with a cure time of 72 hours.

Rust / corrosion proofing compound shall be applied to all
Accessible rust / corrosion prone areas by means of airless spray.
Access holes shall be sealed except where necessary for drainage.

The areas to be rust / corrosion proofed shall include but not be

Limited to, the following:

Cab & chassis:

- Light wells
- Doors
- Rocker panels and rear vertical door jambs
- Front hinge door pillars
- Fender wells and fenders
- Underside

- All enclosed, boxed-in, and double paneled sections
- Body:
- Fender wells and fenders
- Entire underbody

It is understood that rust/corrosion proofing compound shall not be applied to any area where its application will interfere with mechanical or electrical parts including, but not limited to:

- Exhaust system
- Transmission
- Shock absorber
- Differential
- Housings
- Engine assembly and accessories
- Steering linkage,
- Driveshafts
- Universal joints
- Wheels and tires.

Rust / corrosion proofing compound shall be a petroleum-based rust / corrosion preventative.

SCOTCHLITE STRIPE **Y/N**

There shall be a straight 6" wide black Scotchlite stripe, with an additional 1" wide stripe located above and below. The stripes shall be located no higher than 60" from the ground installed on the apparatus cab and body. The stripes shall cover a minimum of sixty percent (60%) of each side of the apparatus and forty percent (40%) of the front and rear of the apparatus. The stripe shall be installed to meet the current NFPA requirements.

STRIPE - REFLECTIVE CHEVRON PATTERN **Y/N**

The rear surface of the unit shall be overlaid with a reflective material, installed in an alternating "Chevron" pattern in the colors of red and yellow and shall be similar in design and style of the recently delivered apparatus.

The left and right sides of the painted front bumper shall be overlaid with a reflective material, installed in an alternating "Chevron" pattern in the colors of red and yellow and shall be similar in design and style of the R4.

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DEALER PRE-DELIVERY SERVICE **Y/N**

The completed apparatus shall undergo a Pre-Delivery Service at the dealer's facility prior to final delivery to the customer. The Pre-Delivery service shall include the following: chassis lubrication, engine oil change, engine oil filter change, all fluid levels checked and topped off as necessary, complete inspection of all vehicle systems, cleaning and detailing of the entire apparatus.

REFLECTIVE LETTERING **Y/N**

There shall be a maximum of sixty (60) 3" tall reflective letters applied to the apparatus. The lettering shall be outlined and have a one color drop shade applied. The exact color and location of the lettering and shading shall be supplied by the department and shall be similar in design and style of the recently delivered Rescue Pumper(Rescue 4).

WHEEL CHOCKS WITH BRACKETS **Y/N**

There shall be a two (2) pair of non-folding wheel chocks with a horizontal chock holder mounted on the apparatus body as directed by the fire department.

SKF LUBRICATION SYSTEM **Y/N**

The SKF automatic lubrication system shall provide automatic grease application up to 24 designated wear points on the unit, with the recommended dosages, per system interval cycle. The auto lube system shall be powered by an electrically driven Gear Pump. The gear pump shall be top mounted to a reservoir assembly with a capacity of 2.7 liters.
The pump shall operate against a back pressure of 38 BAR (550 PSI) nominal, with an output of 160 cc/min. The pump assembly shall be mounted in a suitable location to facilitate care and maintenance of the system by removal of the cover assembly for access to the refill valve connection for replenishment of the grease reservoir. Distribution of lubricant shall be via Piston Distributors utilizing the “post lubrication principle”, dispensing lubricant on the off cycle of the system or pump run time, with metering nipples bearing dosage identification which can be field changeable without disruption of other lubrication point connections.
The auto lube system shall be operated via an electronic control module with System Monitoring capabilities of the main line and operating cycle with dash mounted visual indication to the vehicle operator. The control module shall have LED's and a system reset button to initiate a lube cycle for diagnostic purposes and/or reset the control module in the event a system fault has occurred. Upon a fault, the system is inoperable until the fault has been corrected and a system reset has been initiated by the operator or serviceman.

ON-SPOT TIRE CHAINS **Y/N**

On-Spot chains will be installed in the rear of the vehicle according to the manufacturers specifications.

REAR VIEW CAMERA **Y/N**

To allow for safe backing of the vehicle a camera at the rear of the vehicle in the recessed area with the traffic advisor board. Proximity sensors will be installed in the rear of the vehicle. A color monitor shall be mounted in the front of the cab with audible alarms will also be installed for proximity. Camera shall be automatically activated when the vehicle is placed in reverse.

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ROAD SAFTEY CONES **Y/N**

Five-(5) 28” fluorescent orange Road Safety Cones with an exterior mounting bracket shall be provided and mounted. Final location will be determined during the final inspection.

SMOKE EJECTOR **Y/N**

Furnish (1) One SUPER VAC Model P164E HAZ smoke ejector.

DECK GUN – PORTABLE MONITOR **Y/N**

Task Force Tips Crossfire model # XFC-72 portable lightweight monitor package with capabilities of delivering of up to 1250 GPM shall be supplied and installed. It shall consist of the monitor top, stacked tips, a stream straightener, Extend-A-Gun, Portable Bass Inlet and installation bracket set.

The package shall include:

- Task Force Tips Crossfire Model Portable Monitor Top.
- Task Force Tips smooth bore stacked tip set shall be provided. The set shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with a flow/pressure chart, orifice size, and thread size.
- Task Force Tips Model # XF-SS10 Stream Straightener with pressure gauge.
- Task Force Tips model # XG18PL-XL Manually Telescoping Waterway.
- Task Force Tips Model XFH-2NJ Portable Bass Inlet.
- A sensor on the waterway with an indicator light in the cab and on the pump panel to indicate that the monitor is raised.
- An automatic drain to remove remaining water and avoid freezing.

14' ROOF LADDER **Y/N**

There shall be one (1) Alco-Lite model PRL-14, 14' roof ladder of single section aluminum, with folding steel roof hooks on one end and steel spikes on the other end supplied with the vehicle. The ladder shall meet or exceed the latest NFPA standards.

24' EXTENSION LADDER **Y/N**

There shall be one (1) Alco-Lite model PEL-24, 24' two-section, aluminum, extension ladder with steel spikes supplied with the vehicle. The ladder shall meet or exceed the latest NFPA standards.

10’ FOLDING LADDER **Y/N**

There shall be one (1) Alco-Lite model FL-10 , 10’ aluminum, folding ladder supplied with the vehicle. The ladder shall meet or exceed the latest NFPA standards.

MOUNTING ALLOWANCE **Y/N**

An allowance of $3,000.00 shall be included for equipment mounting and brackets as determined by the fire department.

MANUALS AND DOCUMENTATION ON CD **Y/N**

The following manual, guides and parts information which shall be vehicle specific shall be required with the delivery of the apparatus and shall be furnished in both a printed and thumb drive version.

Two-(2) sets of the following shall be supplied:

- Operator Manual
- Parts List
- Electrical Wiring Diagrams
- Electrical Troubleshooting Guide
- Air System Diagram
- Hydraulic System Diagram
- Pump System
- Maintenance Interval Schedule

Optional add/deducts

The following shall be priced but not included in the cost of the vehicle:

6" STEAMER INLET - REAR Y/N

One-(1) 6" steamer inlet shall be provided on the rear of the pumper and shall be located in the rear center compartment. The rear suction shall be capable of suppling water so that pump can produce no less than 90% of the rated pump capacity. The rear steamer inlet shall be controlled from the pump panel with an Elkhart Series 2900 valve with an electric actuator. The actuator shall be operated utilizing an Elkhart Electronic Valve Controller and the controller shall be mounted on the pump panel. All piping for the rear suction shall be a minimum of 5" diameter sch. 40 galvanized pipe. Where vibration or chassis flexing may cause damage or loosen piping, the pipe shall be equipped with Victaulic or roustabout couplings. All low spots in the rear suction piping shall be furnished with automatic ball drip/drain valves. The rear steamer inlet shall extend approximately 18" into the compartment and shall be furnished with long handle chrome cap and 6" screen and a 6" NST x 5" Storz Swivel adapter with cap.

HYDRAULIC GENERATOR Y/N

A Harrison STINGER MSV Hydraulic Driven Generator rated at 6,000 watts, 50/25 amps, 120/240VAC, 60Hz, 1-phase shall be provided installed on the apparatus. There shall be a generator enable switch installed on the cab dash. The system shall be capable of producing the nominal output power of 6.0 kW, 120V/240V, single phase, 60 Hz. The generator shall be installed per the manufacturer recommendations and shall be capable of supplying full power during all engine speeds or operation modes.

The generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration system, and a manifold containing a cross-port check valve plus system relief valve.

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

The generator shall be a commercial type with a heavy-duty bearing and of brushless design to ensure low maintenance.

The reservoir shall include an oil level gauge, oil temperature gauge, fill cap, fill strainer, and a boost unit to provide a positive pressure to the pump suction port and shall be easily accessible and readable without removing panels. The reservoir shall be equipped with a remote drain and valve below the frame rails. The generator and hydraulic motor shall be close coupled and permanently aligned using a Morse taper with a through bolt to secure the motor to the generator.

The PTO driven hydraulic pump and motor shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. The pump will match to the system with the proper orifice, pressure compensator and load sensing to provide a stable output over the rated speed range of the pump and with electrical loads from no load to full-load. The PTO ratio shall be selected to allow operation throughout the entire engine RPM range; idle to full throttle.

A display meter consisting of (4) numeric LED displays shall be used. The meter shall simultaneously display system voltage, frequency and amperage in each of the two 120V legs. A high temperature visual indicator shall be provided and installed.

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

When properly installed, the system shall be warranted by the manufacturer for a period of not less than two years or two thousand hours, which ever should come first. The hydraulic generator shall be located in the open bin on top of the body over the pump assemble.

GENERATOR/INVERTER TEST AND CERTIFICATION **Y/N**

The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

P.T.O. (POWER TAKE OFF) FOR GENERATOR **Y/N**

The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission which can be engaged by the generator switch when the truck is in motion. An indicator light shall be located in the cab next to the generator switch to indicate when the PTO is engaged.
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P.T.O. LIGHT INDICATOR FOR GENERATOR **Y/N**

A green light to indicate that the PTO is in gear shall be mounted on the cab dash next to the generator switch.