

# Burlington, VT Fire Department

Proposed Pumper Detail Specifications

Amended 9.30.2016



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**Intent of Specifications**

It is the intent of these specifications to clearly describe the furnishing and delivery to the Burlington Fire Dept., a complete apparatus equipped as specified in the following document. The primary objective of these specifications is to obtain the most acceptable apparatus for service in the Fire Department. These specifications cover specific requirements as to the type of construction and tests the apparatus must conform to, together with certain details as to finish, material preferences, equipment and appliances with which the successful bidder must conform.

*These specifications are intended to establish a minimum level of quality and manufacturing standards that are to be used in the construction of the apparatus and are not meant to be specific to any single manufacturer.*

The design of the apparatus must embody the latest approved automotive design practices. The workmanship must be of the highest quality in its respective field. Special consideration shall be given to service access to areas needing periodic maintenance, ease of operation, and symmetrical proportions. Construction must be heavy-duty and ample safety factors must be provided to carry loads as specified. The construction method employed will be in such a manner as to allow ready removal of any component for service or repair.

The apparatus shall conform to the National Fire Protection Association Standard for Automotive Fire Apparatus, number 1901, in its most recent edition, unless otherwise specified in this document. Only the specified firefighting support equipment listed in these specifications shall be provided.

The apparatus shall further conform to all Federal Motor Vehicle Safety Standards. No exception.

Each bidder shall furnish satisfactory evidence of their ability to design, engineer, and construct the apparatus specified and shall state the location of the factory producing the apparatus. They shall also substantiate they are in a position to render prompt and proper service and to furnish replacement parts for the apparatus.

Each bid must be accompanied by a set of detailed contractor's specifications consisting of a detailed description of the apparatus and equipment proposed. All bid proposal specifications must be in the same sequence as the advertised specification for ease of comparison. These specifications shall include size, location, type, and model of all component parts being furnished. Detailed information shall be provided on the materials used to construct all facets of the apparatus body. Any bidder who fails to submit detailed construction specifications, or who photo copies and submits these specifications as their own construction details will be considered non-responsive and shall render their proposal ineligible for award. No exception.

Bids will be addressed and submitted in accordance with the instructions provided on the cover sheet.

It shall be the responsibility of the bidder to assure that their proposal arrives at the location and time indicated. Late proposals, telegrams, facsimile, or telephone bids will not be considered. No exception.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>All bidders should propose payment terms as payable upon delivery to the Burlington Fire Dept. No required prepayments or progress payments are to be proposed.</p> <p><b>Bid Bond</b></p> <p>A bid security in the form of a Bid Bond, cashier's check, or certified check made payable to the Purchaser in the amount of ten percent (10%) of the total bid shall be required. This shall serve as a guarantee which may be forfeited and retained by the Purchaser in lieu of its other legal remedies if a successful bidder's proposal is accepted by the Purchaser and the bidder shall fail to execute and return to the Purchaser the required contract and bonds within ten (10) days after delivery. If a Bid Bond is provided, it shall be issued by a bonding company licensed to bond in this State.</p> <p><b>Certificate of Insurance</b></p> <p>Each bidder shall furnish, with their proposal, a Certificate of Product Liability Insurance for a minimum of ten (10) million dollars. Failure to provide this documentation shall render the proposal non-responsive and the bid shall be rejected. This certificate shall be from the prime builder only. Certificates submitted from various sub-contractors in order to total the ten million dollar minimum will not be acceptable as meeting the requirements of this section.</p> <p>If one of the major portions of the apparatus (i.e. chassis, or body) is not designed, fabricated, and assembled by the prime builder, a separate Certificate of Liability Insurance for a minimum of ten (10) million dollars must be provided by each additional contractor.</p> <p>The Certificate must be made out to the Purchaser and must be original. Submission of a non-original Certificate, or a Certificate provided that is not made out to the Purchaser will not meet the requirements of this section.</p> <p><b>Delivery</b></p> <p>The bidder shall state the time required for delivery of the completed unit on the proposal page. The completed unit shall be delivered to the purchaser with full instructions provided to Fire Department personnel on operation, care and maintenance of apparatus at the purchaser's location.</p> <p><b>Exceptions</b></p> <p>The following apparatus specifications are considered minimum design and construction standards against which the apparatus will be inspected. It is the intent to receive proposals on equipment/apparatus meeting the attached detailed specifications in their entirety. Compliance to these specifications shall be indicated by a check mark under the appropriate column next to each major component. Any proposals being submitted, without "Full Compliance" with these specifications, shall so state on the bid proposal page, followed by a detailed "Letter of Exceptions" listing the areas of non-compliance. The reference must include page number, paragraph, and the exact nature of the exception.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Failure to follow this format, provided for the convenience of the Purchaser, will render the vendor's proposal non-responsive and ineligible for award of contract.</p> <p>The Purchaser may add the statement "No Exception" to a component or design feature in these specifications. In the interest of fleet conformity or specific performance requirements, the Purchaser will not permit exceptions taken to these item(s). The Purchaser reserves the right to reject any or all bid proposals and purchase the equipment it deems most suitable to its needs. The Purchaser does not, in any way, obligate itself to accept the lowest or any bid. Any bidder taking total exception to the complete specification or a major element will result in immediate rejection of the proposal.</p> <p><b>ISO Compliance</b></p> <p>The manufacturer shall operate a Quality Management System meeting the requirements of ISO 9001:2000.</p> <p>The International Organization for Standardization (ISO) is a recognized world leader in establishing and maintaining stringent manufacturing standards and values. The manufacturer's certificate of compliance affirms that these principles form the basis for a quality system that unswervingly controls design, manufacture, installation, and service.</p> <p>The manufacturer's quality systems shall consist of, but not be limited to, all written quality procedures (aka QOP) and other procedures referenced within the pages of the manufacturer's Quality Manual, as well as all Work Instructions, Workmanship Standards, and Calibration Administration that directly or indirectly impacts products or processes. In addition, all apparatus assembly processes shall be documented for traceability and reference. The manufacturer shall also engage the services of a certified third party for testing purposes where required.</p> <p>If the manufacturer operates more than one manufacturing facility each facility must be ISO certified.</p> <p>A copy of the manufacturer's certificate of ISO compliance for each manufacturing facility shall be provided with the bid.</p> <p><b>Proposal Price</b></p> <p>Each bidder's proposal must include all items required in the specifications unless a specific exception is taken. Any bidder who option prices an item included in these specifications that does not specifically require option pricing will have their proposal rejected without further cause.</p> <p><b>Reference List</b></p> <p>Each bid shall be accompanied by a list of at least twenty-five (25) similarly constructed apparatus presently in service. Each reference must be apparatus built of the same construction</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>style as these specifications call for. This list shall include customers' names, addresses, and date apparatus was placed in service.</p>		
<p><b>Service Requirements</b></p> <p>Each bidder shall supply, with their proposal, detailed information on the bidder's ability to perform routine and emergency service on the apparatus after delivery. Detailed information shall be provided on service facilities, personnel, service vehicles, and the type and nature of repair work the bidder is able to provide. Bidder shall state the number of miles from the Purchaser's facility to the nearest fully staffed repair facility operated by the bidder. It is the intent of the Purchaser to assure that parts and service are readily available for the equipment specified. Service capabilities will be one of the criteria for award of this contract.</p>		
<p><b>Single Source Manufacturing - Pumper</b></p> <p>In order to protect the Purchaser from divided warranty responsibility between chassis, and body manufacturers, proposals will only be considered from apparatus builders who design, fabricate, and assemble the complete apparatus at their own facilities. This shall include the cab shell, chassis assembly, and complete body structure. Private labeling of another manufacturer's chassis, aerial, or body will not meet the requirements of this section. NO EXCEPTIONS ALLOWED.</p>		
<p><b>Hose Bed Capacity</b></p> <p>The hose bed shall have the capacity to store the following hose from the driver side to the officer side;</p> <p>200 ft of 2-1/2 inch, 300 ft of 1- 3/4 inch, and 1000 ft of 4 inch LDH. 1 3/4" hose bed shall be 4 1/2" clear width, and 2 1/2" hosebed shall be 5 1/2" clear width.</p> <p>Additional hose storage shall be configured above the officer's side ladder tunnel and high-rise pack storage boxes. This area shall have the capacity to store 400' of 2 1/2" double jacket fire hose.</p>		
<p><b>Overall Height Restriction</b></p> <p>The apparatus shall have an overall height restriction of 10 ft.</p>		
<p><b>Overall Length Restriction</b></p> <p>The apparatus shall have an overall length restriction of 33 ft.</p>		
<p><b>NFPA Compliance</b></p> <p>The supplied components of the apparatus shall be compliant with NFPA 1901, 2016 edition.</p>		

**Equipment Capacity**

Equipment allowance on the apparatus shall be 2000 lbs. This allowance is in addition to the weight of the hoses and ground ladders listed in the shop order as applicable.

**BUMPERS**

**Front Bumper Extension**

The bumper shall be extended approximately 20” from the face of the cab as required.

**Bumper Gravel Shield**

The extended front bumper gravel shield shall be made of 3/16” (.375”) aluminum treadplate material.

**Bumper**

A heavy duty 10" high steel channel type front bumper shall be provided. The front corners of the bumper shall be angled at 45 degrees to reduce swing clearance. The driver side of the bumper shall have a notch to allow room for a flush mounted Q2B siren.

The bumper shall be painted job color and will have 6” alternating yellow/red chevron stripes.

The bumper shall have 10 - 8” hollow vertical black rubber bumper guards mounted in the vertical position. 2 (two) shall be evenly distributed on each side of the bumper, 1 shall be on each 45 degree corner, and 4 (four) shall be evenly distributed across the front face.

**Bumper Tray - Center**

A hose tray constructed of 1/8” aluminum shall be recessed into the front bumper extension. The tray shall be located in the center of the bumper and be approximately 14" deep (13" to the top of the slats), 34” wide, and 13” from front to back. One inch thick aluminum slats shall be included in the bottom of the hose tray to aid in the dissipation of water from the tray.

**Lid, Bumper Hose Tray**

The center bumper tray shall have a diamond plate lid. The lid shall be hinged and shall be secured in the closed position by a D-Ring latch and held open with a pneumatic shock.

**FRAME ASSEMBLY**

**Rear Underbody Support Frame**

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The body shall be supported at the rear by a steel frame extension bolted to the chassis frame rails. The frame rails and frame extension shall be isolated from the aluminum body extrusions by 5/16" x 2" fiber reinforced rubber.</p> <p>The frame extension shall be built with (2) 2.5" sq. x .25 wall thickness x full width cross rails welded to (2) 2.5" sq. x .25 wall thickness side rails. The frame extension assembly will be welded to steel weldments, which are secured to the chassis frame with grade 8 5/8" bolts.</p> <p>The frame extension shall not interfere with N.F.P.A. minimum requirements for angle of departure.</p> <p><b>Frame Assembly</b></p> <p>The frame shall consist of two (2) C-channel frame rails with heavy-duty cross-members. Each frame rail shall have the following minimum specifications in order to minimize frame deflection under load and thereby improve vehicle ride and extend the life of the frame:</p> <p>Dimensions: 10-1/4" x 3-1/2" x 3/8"</p> <p>Material: 110,000-psi minimum yield strength, high strength, low alloy steel</p> <p>Section Modulus: 16.61 cu. in.</p> <p>Resistance to Bending Moment (RBM): 1,827,045 in. lbs.</p> <p>If larger rails are provided, the maximum height of each frame rail shall not exceed the 10-1/4" dimension by more than 1/2" in order to ensure the lowest possible body height for ease of access as well as the lowest possible vehicle center of gravity for maximum stability.</p> <p>There shall be a minimum of six (6) cross-members joining the two (2) frame rails in order to make the frame rigid and hold the rails/liners in alignment. The cross-members shall be a combination of a formed steel C-channel design along with heavy duty steel fabricated designs as required for the exact chassis configuration. The cross-members shall be attached to the frame rails with not less than four (4) bolts at each end arranged in a bolt pattern to adequately distribute the cross-member load into the rail/liner and minimize stress concentrations.</p> <p>All frame fasteners shall be high-strength Grade 8, flanged-head threaded bolts and nuts for frame strength, durability, and ease of repair. The nuts shall be Stover locknuts to help prevent loosening. The frame fasteners shall be tightened to the proper torque at the time of assembly.</p> <p>The frame rails shall be <b>zinc plated (galvanized)</b> for improved corrosion resistance. The galvanization shall be a minimum of 4 mils thick and done in accordance with ASTM A123. The powder coat shall be 6.5 mils thick (+/- 1.5 mils) and pass ASTM D3359 testing.</p> <p>The frame mounted components (suspensions, axles, air tanks, battery boxes, fuel tank, etc.) shall be painted black.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The apparatus manufacturer shall supply a full lifetime frame warranty including cross-members against defects in materials or workmanship. Warranties that provide a lifetime warranty for only the frame rails, but not the cross-members, are not acceptable. NO EXCEPTIONS.</p>		
<p>The custom chassis frame shall have a WHEEL ALIGNMENT in order to achieve maximum vehicle road performance and to promote long tire life. The alignment shall conform to the manufacturer's internal specifications. All wheel lug nuts and axle U-bolt retainer nuts shall be tightened to the proper torque at the time of alignment. The wheel alignment documentation shall be made available at delivery upon request.</p>		
<p><b>Galvanized Frame Components</b></p>		
<p>The front chassis frame extensions, rear subframe (If equipped), crossmembers and battery brackets shall be <b>zinc plated (galvanized)</b> for increased corrosion resistance. The coating shall be done in compliance with the ASTM A123 Standard.</p>		
<p><b>AXLE OPTIONS</b></p>		
<p><b>Front Axle</b></p>		
<p>The vehicle shall utilize an ArvinMeritor FL-941 front axle with a rated capacity of 18,700 lbs. It shall have "easy steer" knuckle pin bushings and 68.5" kingpin centers. The axle shall be of I-beam construction and utilize grease-lubricated wheel bearings. The vehicle shall have a nominal cramp angle of 45 degrees, plus two (+ 2) degrees to minus three (- 3) degrees including front suction applications.</p>		
<p>The front axle hubs shall be made from ductile iron and shall be designed for use with 10 hole hub-piloted wheels in order to improve wheel centering and extend tire life.</p>		
<p>The front springs shall be parabolic tapered, minimum 4" wide x 54" long (flat), minimum 3 leaf, progressive rate with bronze bushings and a capacity of 20,000 lbs. at the ground.</p>		
<p>Tapered leaf springs provide a 20% ride improvement over standard straight spring systems. Supporting documentation/data shall be provided upon request.</p>		
<p>The vehicle shall be equipped with a Sheppard model M-110 power steering gear, used in conjunction with a power assist cylinder. The steering assembly shall be rated to statically steer up to a maximum front axle load of 18,700 lbs. Relief stops shall be provided to reduce system pressure upon full wheel cut. The system shall operate mechanically should the hydraulic system fail.</p>		
<p>A 2-year/unlimited miles parts and 2-year labor axle warranty shall be provided as standard by ArvinMeritor Automotive.</p>		
<p><b>Shock Absorbers Front</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Koni model 90 shock absorbers shall be provided for the front axle. The shocks shall be three way adjustable.</p>		
<p>The shocks shall be covered by the manufacturer's standard warranty.</p>		
<p><b>Front Axle Oil Seals</b></p>		
<p>The front axle shall have Stemco oil seals with sight glass to check the lubricant level of the axle spindles.</p>		
<p><b>Rear Axle</b></p>		
<p>The vehicle shall be equipped with an ArvinMeritor RS-24-160 single rear axle with single-reduction hypoid gearing and a manufacturer's rated capacity of 24,000 lbs. The axle shall be equipped with oil-lubricated wheel bearings with ArvinMeritor oil seals. The rear axle hubs shall be made from ductile iron and shall be designed for use with 10 hole hub-piloted wheels to improve wheel centering and extend tire life.</p>		
<p>A 2-year/unlimited miles parts and 2-year labor rear axle warranty shall be provided as standard by ArvinMeritor Automotive.</p>		
<p><b>SUSPENSIONS</b></p>		
<p><b>Rear Suspension</b></p>		
<p>The rear suspension shall be a pair of linear-rate leaf springs with auxiliary "helper" leaf springs and bronze bushings. The variable-rate springs with auxiliary springs ensure that the vehicle rides and handles smoothly under both loaded and unloaded conditions. The suspension shall be rated for the maximum axle capacity.</p>		
<p><b>WHEEL OPTIONS</b></p>		
<p><b>Wheels</b></p>		
<p>The vehicle shall have two (6) Accuride polished (on outer wheel surfaces only) aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires.</p>		
<p><b>Wheel Trim Package</b></p>		
<p>The wheels shall have stainless steel lug nut covers. The front axle shall be covered with American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel universal baby moons. The rear axle shall be covered with American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel, spring clip band mount high hats, DOT</p>		

user friendly. All stainless steel cover components shall carry a lifetime warranty plus a 2 year re-buffing policy.

## TIRE OPTIONS

### Front Tires

The front tires shall be two (2) Michelin 385/65R22.5 tubeless type 20 PR radial tires with XFE highway tread.

The tires with wheels shall have the following weight capacity and speed ratings:

Up to 19,840 lbs. @ 65 MPH (steel or aluminum wheels)

Up to 21,228 lbs. @ 65 MPH (steel or aluminum wheels with intermittent fire service rating)

19,840 @ 75 MPH (steel or aluminum wheels with intermittent fire service rating)

The wheels and tires shall conform to the Tire and Rim Association requirements.

### Rear Tires

The rear tires shall be Michelin 11R22.5 tubeless type radial tires with XDN2 mud and snow tread.

The tires with wheels shall have the following weight capacity:

24,000 lbs. (dual) @ 75 MPH

The wheels and tires shall conform to the Tire and Rim Association requirements.

### Tire Pressure Indicators

The apparatus shall be provided with Real Wheels AirGuard LED tire pressure indicating valve stem caps. When the tire is under inflated by 5-10 PSI, the LED indicator on the cap shall flash red. The indicator housings shall be shock resistant and constructed from polished stainless steel. The indicators shall be calibrated by attaching to valve stem of a tire at proper air pressure per load ratings and easily re-calibrated by simply removing and re-installing them during service.

Real Wheel Part number RWC1234 was superseded by RWC1235 as of June 2015

## BRAKE SYSTEMS

**Front Brakes**

The front axle shall be equipped with Meritor DiscPlus EX225H 17 inch disc brakes.

The brakes shall be covered by the manufacturer’s standard warranty which is three years, unlimited mileage and parts only.

**Rear Brakes**

The rear axle shall be equipped with Meritor DiscPlus EX225H 17 inch disc brakes with a maximum rated capacity of 27,000 lbs.

The brakes shall be covered by the manufacturer’s standard warranty which is three years, unlimited mileage and parts only.

**Brake System**

The vehicle shall be equipped with air-operated brakes and an anti-lock braking system (ABS). The brake system shall meet or exceed the design and performance requirements of the current Federal Motor Vehicle Safety Standard (FMVSS)-121, and the test requirements of the current NFPA 1901 Standard.

A dual-treadle brake valve shall correctly proportion the braking power between the front and rear systems. The air system shall be provided with a rapid pressure build-up feature, designed to meet current NFPA 1901 requirements, to allow the vehicle to begin its emergency response as quickly as possible.

A pressure-protection valve shall be installed to prevent use of the air horns or other air-operated devices should the air system pressure drop below 85 psi. This feature is designed to prevent inadvertent actuation of the emergency/parking brakes while the vehicle is in motion.

Two (2) air pressure needle gauges, one (1) each for front and rear air pressure, with a warning light and buzzer shall be installed at the driver’s instrument panel.

The braking system shall be provided with a minimum of three (3) air tank reservoirs for a total air system capacity of 5,214 cu. in. One (1) reservoir shall serve as the wet tank and a minimum of one (1) tank shall be supplied for each of the front and rear axles. The total system shall carry a sufficient volume of air to comply with FMVSS-121.

Tank Capacities in Cubic Inches:

Wet	Front	Rear	Total
1,738	1,738	1,738	5,214

Spring-actuated emergency/parking brakes shall be installed on the rear axle.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>A Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall provide automatic emergency brake application when the air brake system pressure falls below 40 psi in order to safely bring the vehicle to a stop in case of an accidental loss of braking system air pressure.</p>		
<p>A four-channel Wabco ABS shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to both front and rear axles. All electrical connections shall be environmentally-sealed for protection against water, weather, and vibration.</p>		
<p>The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall detect approaching wheel lock-up and instantly modulate (or pump) the brake pressure up to five (5) times per second to prevent wheel lock-up. Each wheel shall be individually controlled. To improve field performance, the system shall be equipped with a dual-circuit design configured in a diagonal pattern. Should a malfunction occur in one circuit, that circuit shall revert to normal braking action. A warning light at the driver`s instrument panel shall signal a malfunction.</p>		
<p>The system shall also be configured to work in conjunction with all auxiliary engine, exhaust, or driveline brakes to prevent wheel lock-up.</p>		
<p>To improve maintenance troubleshooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started, and a dash-mounted light shall go out once the vehicle is moving above 4 MPH.</p>		
<p>A 3 year/300,000 mile parts and labor Anti-Locking Braking System (ABS) warranty shall be provided as standard by Meritor Automotive.</p>		
<p><b>Park Brake Release</b></p>		
<p>One (1) Bendix-Westinghouse PP-5 parking brake control valve shall be supplied on the lower dash panel, to the right of the steering column, within easy reach of the driver.</p>		
<p><b>Automatic Traction Control</b></p>		
<p>To further improve vehicle drive characteristics, the unit shall be fitted with automatic traction control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve shall be added to the ABS system. The system shall control the engine and brakes to improve acceleration slip resistance. The system shall have a switch accessible to driver and a dash mounted light that shall come on when ATC is controlling drive wheel slip.</p>		
<p>A 3 year/300,000 miles parts and labor Automatic Traction Control (ATC) warranty shall be provided as standard by Meritor Automotive.</p>		
<p><b>AIR SYSTEM OPTIONS</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Air Dryer</b></p> <p>The chassis air system shall be equipped with a Bendix-Westinghouse AD-9 air dryer to remove moisture from the air in order to help prevent the air lines from freezing in cold weather and prolong the life of the braking system components.</p> <p><b>Air Inlet</b></p> <p>A 1/4" brass quick-release air inlet with a male connection shall be provided. The inlet shall allow a shoreline air hose to be connected to the vehicle, discharging air directly into the wet tank of the air brake system. It shall be located in the driver door jamb.</p> <p><b>Air Lines</b></p> <p>Air brake lines shall be constructed of color coded nylon tubing routed in a manner to protect them from damage. Brass fittings shall be provided.</p> <p><b>Air Horns</b></p> <p>Dual Grover air horns shall be provided, connected to the chassis air system. The horns shall be mounted through the front bumper. The front bumper shall have two (2) holes punched to accommodate the horns. A pressure protection valve shall be installed to prevent the air brake system from being depleted of air pressure.</p> <p><b>ENGINES &amp; TRANSMISSIONS</b></p> <p><b>Transmission Selector</b></p> <p>A push-button transmission shift module, Allison model 29538373, shall be located to the right side of the steering column within easy reach of the driver. The shift position indicator shall be indirectly lit for after dark operation. The shift module shall have a "Do Not Shift" light and a "Service" indicator light. The shift module shall have means to enter a diagnostic mode and display diagnostic data including oil life monitor, filter life monitor, transmission health monitor and fluid level. A transmission temperature gauge with warning light and buzzer shall be installed on the cab instrument panel.</p> <p><b>Transmission Fluid</b></p> <p>The transmission fluid shall be TransSynd synthetic.</p> <p><b>Vehicle Speed</b></p> <p>The maximum speed shall be electronic limited to 68 MPH as required by NFPA 1901.</p> <p><b>Engine/Transmission Package</b></p>		

**Engine**

The vehicle shall utilize a Cummins ISL electronic engine as described below:

- 450 gross bhp at 2200 rpm
- 1250 lb.-ft. peak torque at 1400 rpm
- Six (6)-cylinder, charge air cooled, 4-cycle diesel
- 543 cu. in. displacement -- 4.49 in bore x 5.69 in stroke (8.9 liters)
- 16.6:1 compression ratio
- Interact System Controlled Viable Geometry Turbocharged
- Engine shall be equipped with Full-Authority Electronics
- Electronic Timing Control fuel system
- Fuel cooler (when equipped with a fire pump)
- Fleetguard FS1022 fuel filter with integral water separator and water-in-fuel sensor approved by Cummins for use on the ISL engine
- Fleetguard LF9009 Venturi Combo combination full-flow/by-pass oil filter approved by Cummins for use on the ISL engine
- Engine lubrication system, including filter, shall have a minimum capacity of 25 quarts
- Delco-Remy 39 MT-HD 12-volt starter
- Cummins 18.7 cubic foot per minute (cfm) air compressor
- Corrosion inhibitor additive for coolant system
- After treatment system consisting of a oxidation catalyst and diesel particulate filter and selective catalyst reduction system
- Ember separator compliant with current NFPA 1901 standard
- The engine shall be compliant with 2016 EPA Emission standards
- Reference curve FR93434EV for ISCAAN

The engine air intake shall draw air through the front cab grill. The intake opening shall be located on the officer (right) side behind front cab face with a plenum that directs air to the air filter. The air cleaner shall be a 11” diameter dry type that is easily accessed for service. Air cleaner intake piping shall be made from aluminized steel tubing with flexible rubber hoses. Air cleaner intake piping clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

The engine exhaust piping shall be a minimum of 4” diameter welded aluminized steel tubing. The muffler shall be mounted horizontally under the right-hand frame rail in back of the cab in order to minimize heat transmission to the cab and its occupants. The exhaust shall be directed away from the vehicle on the right side ahead of the rear wheels in order to keep exhaust fumes as far away as possible from the cab and pump operator position.

A 5-year/100,000-miles parts and labor warranty shall be provided as standard by Cummins.

A copy of the Engine Installation Review stating the engine installation meets Cummins recommendations shall be provided as requested. The engine installation shall not require the operation of any type of ”power-down” feature to meet engine installation tests.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Transmission</b></p> <p>The vehicle shall utilize an Allison EVS3000P, electronic, 5-speed automatic transmission.</p> <p>A push button shift module shall be located right side of the steering column, within easy reach of the driver. The shift position indicator shall be indirectly lit for after-dark operation. The shift module shall have a "Do Not Shift" light and a "Service" indicator light that are clearly visible to the driver. The shift module shall have means to enter a diagnostic mode and display diagnostic data.</p> <p>A transmission oil temperature gauge with warning light and buzzer shall be installed on the cab instrument panel to warn the driver of high oil temperatures that may damage the transmission.</p> <p>The transmission shall have a gross input torque rating of 1250 lb.-ft. and a gross input power rating of 450 HP.</p> <p>The gear ratios shall be as follows:</p> <p>1 - 3.49</p> <p>2 - 1.86</p> <p>3 - 1.41</p> <p>4 - 1.00</p> <p>5 - .75</p> <p>R - 5.03</p> <p>The transmission shall have an oil capacity of 23 quarts and shall be equipped with a fluid level sensor (FLS) system, providing direct feedback of transmission oil level information to the driver.</p> <p>A water-to-oil transmission oil cooler shall be provided to ensure proper cooling of the transmission when the vehicle is stationary (no air flow). Air-to-oil transmission oil coolers, which require constant air flow, are not acceptable.</p> <p>The transmission shall be provided with two (2) engine-driven PTO openings located at the 4 o'clock and 8 o'clock positions for flexibility in installing pto-driven equipment.</p> <p>The automatic transmission shall be equipped with a power lock-up device. The transmission lock-up shall prevent down shifting of the transmission when the engine speed is decreased during pump operations, thereby maintaining a constant gear ratio for safe operation of the pump. The transmission lock-up shall be automatically activated when the pump is engaged in</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>gear. The transmission lock-up shall be automatically deactivated when the pump is disengaged for normal road operation.</p> <p>A 5-year/unlimited miles parts and labor warranty shall be provided as standard by Allison Transmission.</p>		
<p><b>Automatic Shift to Neutral</b></p>		
<p>The transmission shall be programmed to comply with NFPA 1901 and automatically shift to neutral upon application of the parking brake.</p>		
<p><b>SECONDARY BRAKING</b></p>		
<p><b>Jacobs Engine Brake</b></p>		
<p>One (1) Jacobs engine brake shall be installed to assist in slowing and controlling the vehicle as required by NFPA 1901 for vehicles with gross vehicle weight ratings (GVWR) of 36,000 lbs. or greater. An on-off control switch and a high-medium-low selector switch shall be mounted in the cab accessible to the driver.</p>		
<p>When activated, the Jacobs engine brake shall cut off the flow of fuel to the cylinders and alter the timing of the exhaust valves. This shall transform the engine into a high-pressure air compressor, driven by the wheels, and the horsepower absorbed by the engine in this mode shall slow the vehicle. The selector switch allows the driver to select the amount of retarding power.</p>		
<p>When the on-off switch is in the “on” position, the engine brake shall be automatically applied whenever the accelerator is in the idle position and the automatic transmission is in the lock-up mode. If the accelerator is depressed or if the on-off switch is placed in the “off” position, the engine brake shall immediately release and allow the engine to return to its normal function.</p>		
<p><b>Transmission Programming</b></p>		
<p>The transmission shall include the Allison 2nd gear Pre-Select feature. This option will direct the transmission to down shift to second gear when the throttle is released and the Jacobs engine brake (or Telma retarder wired to activate with release of throttle) is engaged. This feature is designed to increase brake life and aid vehicle braking.</p>		
<p><b>EXHAUST OPTIONS</b></p>		
<p><b>Exhaust End Modification</b></p>		
<p>The end of the exhaust tail pipe shall be modified to accommodate a Plymovent in-house exhaust extraction system. The tail pipe will be at 90 degrees and straight out below the side of body. A stop ring shall be provided on the tail pipe to properly position the Plymovent nozzle. The exhaust outlet shall be vented for use with 2013 and newer EPA engines.</p>		

## COOLING PACKAGE

### Engine Cooling Package

#### Radiator

The cooling system shall include an aluminum tube-and-fin radiator with a minimum of 1,408 total square inches of frontal area to ensure adequate cooling under all operating conditions. There shall be a drain valve in the bottom tank to allow the radiator to be serviced. A sight glass shall be included for quick fluid level assessment. The radiator shall be installed at the prescribed angle in order to achieve the maximum operational effectiveness. This shall be accomplished according to established work instructions and properly calibrated angle measurement equipment.

#### Silicone Hoses

All radiator and heater hoses shall be silicone. Pressure compensating band clamps shall be used to eliminate hose pinching on all hoses 3/4" diameter and larger. All radiator hoses shall be routed, loomed, and secured so as to provide maximum protection from chafing, crushing, or contact with other moving parts.

#### Coolant

The cooling system shall be filled with a 50/50 mixture of water and antifreeze/coolant conditioner to provide freezing protection to minus 40 (- 40) degrees F for operation in severe winter temperatures.

#### Coolant Recovery

There shall be a coolant overflow recovery system provided.

#### Charge Air Cooler System

The system shall include a charge air cooler to ensure adequate cooling of the turbocharged air for proper engine operation and maximum performance.

#### Charge Air Cooler Hoses

Charge air cooler hoses shall be made from high-temperature, wire-reinforced silicone to withstand the extremely high temperatures and pressures of the turbocharged air. The hoses shall incorporate a flexible hump section to allow motion and misalignment of the engine relative to the charge air cooler. Charge air cooler hose clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

#### Fan/Shroud

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The fan shall be 30” in diameter with eleven (11) blades for maximum airflow and dynamic balance. It shall be made of nylon for strength and corrosion resistance. The fan shall be installed with grade 8 hardware which has been treated with thread locker for additional security. A fan shroud attached to the radiator shall be provided to prevent recirculation of engine compartment air around the fan in order to maximize the cooling airflow through the radiator. The fan shroud shall be constructed of fiber-reinforced high temperature plastic. The shroud shall be specifically formed with curved surfaces which improves air flow and cooling.</p>		
<p><b>Transmission Cooler</b></p>		
<p>The cooling system shall include a liquid-to-liquid transmission cooler capable of cooling the heat generated from the transmission. When a transmission retarder is selected, the cooler shall have an increased capacity to handle the additional heat load.</p>		
<p><b>FUEL SYSTEMS</b></p>		
<p><b>Fuel System</b></p>		
<p>One (1) 50 gallon fuel tank shall be provided. The tank shall be of an all-welded, aluminized-steel construction with anti-surge baffles and shall conform to all applicable Federal Highway Administration (FHWA) 393.65 and 393.67 standards. The tank shall be mounted below the frame rails at the rear of the chassis for maximum protection. The tank shall be secured with two (2) wrap-around T-bolt type stainless steel straps. Each strap shall be fitted with protective rubber insulation and shall be secured with grade 8 hardware. This design allows for tank removal from below the chassis.</p>		
<p>The fuel tank shall be equipped with a 2” diameter filler neck. The filler neck shall extend to the rear of the vehicle behind the rear tires and away from the heat of the exhaust system as required by NFPA 1901 Standard for Automotive Fire Apparatus. The open end of the filler neck shall be equipped with a twist-off filler cap with a retaining chain.</p>		
<p>The tank shall be plumbed with top-draw and top-return fuel lines in order to protect the lines from road debris. Bottom-draw and/or bottom-return fuel lines are not acceptable. A vent shall be provided at the top of the tank. The vent shall be connected to the filler neck to prevent splash-back during fueling operations. A .50” NPT drain plug shall be provided at the bottom of the tank.</p>		
<p>The tank shall have a minimum useable capacity of 50 gallons of fuel with a sufficient additional volume to allow for thermal expansion of the fuel without overflowing the vent.</p>		
<p>A mechanical fuel pump shall be provided and sized by the engine manufacturer as part of the engine.</p>		
<p><b>Fuel Line</b></p>		
<p>All fuel lines shall be rubber.</p>		

## ALTERNATOR

### 360 Amp Alternator

A Niehoff model C505 360 amp SAE (J56) rated, 320 amp at 200 degrees F NFPA 1901 rated brush-less type alternator with rectifier shall be provided. It shall be self-energized and shall have a negative voltage compensating remote solid-state voltage regulator. The alternator shall be installed in accordance with the engine manufacturer's recommendations.

## BATTERIES

### Battery System

The manufacturer shall supply four (4) heavy duty Group 31 12-volt maintenance-free batteries. Each battery shall be installed and positioned so as to allow easy replacement of any single battery. Each battery shall be equipped with carrying handles to facilitate ease of removal and replacement. There shall be two (2) steel frame mounted battery boxes, one (1) on the left frame rail and one (1) on the right frame rail. Each battery box shall be secured to the frame rail with Grade 8 hardware. Each battery box shall hold (2) batteries. The batteries shall have a minimum combined rating of 4,000 (4 x 1000) cold cranking amps (CCA) @ 0 degrees Fahrenheit and 820 (4 x 205) minutes of reserve capacity for extended operation. The batteries shall have 3/8-16 threaded stud terminals to ensure tight cable connections. The battery stud terminals shall each be treated with concentrated industrial soft-seal after cable installation to promote corrosion prevention. The positive and negative battery stud terminals and the respective cables shall be clearly marked to ensure quick and mistake-proof identification.

Batteries shall be placed on non-corrosive rubber matting and secured with hold-down brackets to prevent movement, vibration, and road shock. The hold-down bracket J-hooks shall be cut to fit and shall have all sharp edges removed. The batteries shall be placed in plastic trays to provide preliminary containment should there be leakage of hazardous battery fluids. There shall be two (2) plastic trays, each containing (2) batteries. Each battery tray shall be equipped with a rubber vent hose to facilitate drainage. The rubber vent hose shall be routed to drain beneath the battery box. The batteries shall be positioned in well-ventilated areas.

One (1) positive and one (1) negative jumper stud shall be provided.

Batteries shall have a warranty of twelve (12) months that shall commence upon the date of delivery of the apparatus.

## CHASSIS OPTIONS

### Engine Fan Clutch

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The engine shall be equipped with a thermostatically controlled engine cooling fan. The fan shall be belt driven and utilize a clutch to engage when the engine reaches a specified temperature and / or the water pump is engaged (if equipped).</p>		
<p>When disengaged, the fan clutch shall allow for improved performance from optional floor heaters, reduced cab interior noise, increased acceleration and improved fuel economy.</p>		
<p>The fan shall be equipped with a fail-safe engagement so that if the clutch fails the fan shall engage to prevent engine overheating.</p>		
<p><b>Drivelines</b></p>		
<p>Drivelines shall have a heavy-duty metal tube and shall be equipped with Spicer 1710HD universal joints to allow full-transmitted torque to the axle(s). Drive shafts shall be axially straight, concentric with axis and dynamically balanced.</p>		
<p><b>Rear Tow Eyes</b></p>		
<p>Two (2) heavy duty tow eyes made of 3/4" (0.75") thick steel having 2-1/2" diameter holes shall be mounted below the body at the rear of the vehicle to allow towing (not lifting) of the apparatus without damage. The tow eyes will be welded to the lower end of a 5" steel channel that is bolted at the end of the chassis frame rails. The tow eyes shall be painted chassis black.</p>		
<p><b>Front Tow Hooks</b></p>		
<p>Two (2) heavy duty painted front tow hooks shall be securely bolted to the front chassis frame rail extensions to allow towing (not lifting) of the apparatus without damage. They shall be mounted in the downward position.</p>		
<p><b>DEF Tank</b></p>		
<p>A diesel exhaust fluid (DEF) tank with a five (5) gallon capacity shall be provided.</p>		
<p>The DEF tank shall include a heater fed by hot water directly from the engine block to prevent the DEF from becoming too cool to operate correctly per EPA requirements. The tank shall include a temperature sensor to control the heater control valve that controls the feed of hot water from the engine to the DEF tank heater.</p>		
<p>A sender shall be provided in the DEF tank connected to a level gauge on the cab dash.</p>		
<p>The tank shall be located left side below rear of cab.</p>		
<p><b>Power Steering Cooler</b></p>		
<p>A heat exchanger (cooler) shall be installed to maintain desired power steering fluid temperature. The cooler shall be a model DH-073-1-1 with air / oil design rated at 6300</p>		

BTU/HR @10 GPM. The cooler shall be mounted in front of the radiator and plumbed with #10 lines.

## CAB MODEL

### Cab Long

The vehicle shall be distinguished by an all-welded aluminum and fully enclosed tilt cab. The cab shall be designed exclusively for fire/rescue service and shall be pre-engineered to ensure long life. It shall incorporate an integral welded substructure of high-strength aluminum alloy extrusions that creates an occupant compartment that is essentially a protective perimeter. The end result is a distinctive structure that is aesthetically appealing, functionally durable, and characterized by increased personnel safety.

The cab shall be constructed from 3/16" (0.188") 3003 H14 aluminum alloy plate roof, floor, and outer skins welded to a high-strength 6063-T6 aluminum alloy extruded subframe. Wall supports and roof bows are 6061 T6 aluminum alloy. This combination of a high-strength, welded aluminum inner structure surrounded on all sides by load-bearing, welded aluminum outer skins provides a cab that is strong, lightweight, corrosion-resistant, and durable.

The inner structure shall be designed to create an interlocking internal "roll-cage" effect by welding two (2) 3" x 3" x 0.188" wall-thickness 6063-T5 aluminum upright extrusions between the 3" x 3" x 0.375" wall-thickness 6061-T6 roof crossbeam and the 2.25" x 3" x 0.375" wall-thickness 6063-T6 subframe structure in the front. An additional two (2) aluminum upright extrusions within the back-of-cab structure shall be welded between the rear roof perimeter extrusion and the subframe structure in the rear to complete the interlocking framework. The four (4) upright extrusions -- two (2) in the front and two (2) in the rear -- shall be designed to effectively transmit roof loads downward into the subframe structure to help protect the occupant compartment from crushing in a serious accident. All joints shall be electrically seam welded internally using aluminum alloy welding wire.

The subframe structure shall be constructed from high-strength 6061-T6 aluminum extrusions welded together to provide a structural base for the cab. It shall include a side-to-side C-channel extrusion across the front, with 3/4" x 2-3/4" (.75" x 2.75") full-width crossmember tubes spaced at critical points between the front and rear of the cab.

The cab floor shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate welded to the subframe structure to give the cab additional strength and to help protect the occupants from penetration by road debris and under-ride collision impacts.

The cab roof shall be constructed from 3/16" (0.188") 3003 H14 aluminum treadplate supported by a grid of fore-aft and side-to-side aluminum extrusions to help protect the occupants from penetration by falling debris and downward-projecting objects. Molded fiberglass or other molded fiber-reinforced plastic roof materials are not acceptable.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The cab roof perimeter shall be constructed from 4" x 6-5/8" (4" x 6.625") 6063-T5 aluminum extrusions with integral drip rails. Cast aluminum corner joints shall be welded to the aluminum roof perimeter extrusions to ensure structural integrity. The roof perimeter shall be continuously welded to the cab roof plate to ensure a leak-free roof structure.</p>		
<p>The cab rear skin shall be constructed from 3/16" (0.188") 3003 H14 aluminum plate. Structural extrusions shall be used to reinforce the rear wall.</p>		
<p>The left-hand and right-hand cab side skins shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate. The skins shall be welded to structural aluminum extrusions at the top, bottom, and sides for additional reinforcement.</p>		
<p>The cab front skins shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate. The upper portion shall form the windshield mask, and the lower portion shall form the cab front. Each front corner shall have a full 9" outer radius for strength and appearance. The left-hand and right-hand sides of the windshield mask shall be welded to the left-hand and right-hand front door frames, and the upper edge of the windshield mask shall be welded to the cab roof perimeter extrusion for reinforcement. The cab front shall be welded to the subframe C-channel extrusion below the line of the headlights to provide protection against frontal impact.</p>		
<p><b>Cab Exterior</b></p>		
<p>The exterior of the cab shall be 94" wide x 139.5" long to allow sufficient room in the occupant compartment for up to ten (10) fire fighters. The cab roof shall be approximately 101" above the ground with the flat roof option. The back-of-cab to front axle length shall be a minimum of 67.5".</p>		
<p>Front axle fenderette trim shall be brushed aluminum for appearance and corrosion resistance. Bolt-in front wheel well liners shall be constructed of 3/16" (0.188") composite material to provide a maintenance-free, damage-resistant surface that helps protect the underside of the cab structure and components from stones and road debris.</p>		
<p>The cab windshield shall be of a two-piece replaceable design for lowered cost of repair. The windshield shall be made from 1/4" (0.25") thick curved, laminated safety glass with a 75% light transmittance automotive tint. A combined minimum viewing area of 2,700-sq. in. shall be provided. Forward visibility to the ground for the average (50th percentile) male sitting in the driver's seat shall be no more than 11 feet 7 inches from the front of the cab to ensure good visibility in congested areas.</p>		
<p><b>Cab Mounts and Cab Tilt System</b></p>		
<p>The cab shall be independently mounted from the body and chassis to isolate the cab structure from stresses caused by chassis twisting and body movements. Mounting points shall consist of two (2) forward-pivoting points, one (1) on each side; two (2) intermediate rubber load-bearing cushions located midway along the length of the cab, one on each side; and two (2) combination rubber shock mounts and cab latches located at the rear of the cab, one (1) on each side.</p>		

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	YES	NO
<p>An electric-over-hydraulic cab tilt system shall be provided to provide easy access to the engine. It shall consist of two (2) large-diameter, telescoping, hydraulic lift cylinders, one (1) on each side of the cab, with a frame-mounted electric-over-hydraulic pump for cylinder actuation.</p> <p>Safety flow fuses (velocity fuses) shall be provided in the hydraulic lift cylinders to prevent the raised cab from suddenly dropping in case of a burst hydraulic hose or other hydraulic failure. The safety flow fuses shall operate when the cab is in any position, not just the fully raised position.</p> <p>The hydraulic pump shall have a manual override system as a backup in the event of an electrical failure. Lift controls shall be located in a compartment to the rear of the cab on the right side of the apparatus. A parking brake interlock shall be provided as a safety feature to prevent the cab from being tilted unless the parking break is set.</p> <p>The entire cab shall be tilted through a 42-45 degree arc to allow for easy maintenance of the engine, transmission and engine components. A positive-engagement safety latch shall be provided to lock the cab in the full tilt position to provide additional safety for personnel working under the raised cab.</p> <p>In the lowered position, the cab shall be locked down by two (2) automatic, spring-loaded cab latches at the rear of the cab. A “cab ajar” indicator light shall be provided on the instrument panel to warn the driver when the cab is not completely locked into the lowered position.</p>		
<p><b>Cab Interior</b></p>		
<p>The interior of the cab shall be of the open design with an ergonomically-designed driver area that provides ready access to all controls as well as a clear view of critical instrumentation.</p> <p>The engine cover between the driver and the officer shall be a low-rise contoured design to provide sufficient seating and elbow room for the driver and the officer. The engine cover shall blend in smoothly with the interior dash and flooring of the cab. An all-aluminum subframe shall be provided for the engine cover for strength. The overall height of the engine enclosure shall not exceed 23” from the floor at each side and 27” in the center section. The engine cover shall not exceed 41” in width at its widest point.</p> <p>The rear portion of the engine cover shall be provided with a lift-up section to provide easy access for checking transmission fluid, power steering fluid, and engine oil without raising the cab. The engine cover insulation shall consist of 3/4” dual density fiberglass composite panels with foil backing manufactured to specifically fit the engine cover without modification to eliminate ”sagging” as found with foam insulation. The insulation shall meet or exceed DOT standard MVSS 302-1 and V-0 (UI subject 94 Test).</p> <p>All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 1901.</p>		

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<p>A minimum of 57.25" of floor-to-ceiling height shall be provided in the front seating area of the cab and a minimum of 55.25" floor-to-ceiling height shall be provided in the rear seating area. A minimum of 36" of seated headroom at the "H" point shall be provided over each fenderwell.</p> <p>The floor area in front of the front seat pedestals shall be no less than 20.5" side to side by 25.0" front to rear for the driver and no less than 20.5" side to side by 26.0" front to rear for the officer to provide adequate legroom.</p> <p>Battery jumper studs shall be provided to allow jump-starting of the apparatus without having to tilt the cab.</p> <p>All exposed interior metal surfaces shall be pretreated using a corrosion prevention system.</p> <p>The interior of the cab shall be insulated to ensure the sound (dbA) level for the cab interior is within the limits stated in the current edition of NFPA 1901. The insulation shall consist of 2 oz. wadding and 1/4" (0.25") foam padding. The padding board shall be backed with 1/4" (0.25") thick reflective insulation. The backing shall be spun-woven polyester. Interior cab padding shall consist of a rear cab headliner, a rear wall panel, and side panels between the front and rear cab doors.</p> <p>The overhead console and heater cover shall be covered with thermoformed, non-metallic, non-fiber trim pieces to provide excellent scuff and abrasion resistance, as well as chemical stain resistance. The thermoformed material shall comply with Federal Motor Vehicle Safety Standard (FMVSS) 302 for flammability of interior materials.</p> <p>The vehicle shall use a seven-position tilt and telescopic steering column to accommodate various size operators. An 18" padded steering wheel with a center horn button shall be provided.</p> <p>A full-width overhead console shall be mounted to the cab ceiling for placement of siren and radio heads, and for warning light switches. The console shall be made from a thermoformed, non-metallic material and shall have easily removable mounting plates.</p> <p>Storage areas, with hinged access doors, shall be provided below the driver and officer seats. The driver side compartment shall be approximately 19.25" x 17.75" x 5.75" high and the officer side compartment shall be approximately 18.25" x 22.5" x 11" high.</p> <p>The front cab steps shall be a minimum of 8" deep x 24" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901 standards. The rear cab steps shall be a minimum 12" deep x 21" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901 standards. The rear steps shall incorporate intermediate steps for easy access to the cab. The steps are to be located inside the doorsill, where they are protected against mud, snow, ice, and weather. The step surfaces shall be aluminum diamond plate with a multi-directional, aggressive gripping surface incorporated into the aluminum diamond plate in accordance with current NFPA 1901.</p>		

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	YES	NO
<p>A black rubber grip handle shall be provided on the interior of each front door below the door window to ensure proper hand holds while entering and exiting the cab. An additional black rubber grip handle shall be provided on the left and right side windshield post for additional handholds.</p>		
<p><b>Cab Doors</b></p>		
<p>There shall be reflective signs on the interior of each cab door in compliance with all NFPA requirements.</p>		
<p>Four (4) side-opening cab doors shall be provided. Doors shall be constructed of a 3/16" (0.188") aluminum plate outer material with an aluminum extruded inner framework to provide a structure that is as strong as the side skins.</p>		
<p>Front cab door openings shall be approximately 36" wide x 71.5" high, and the rear cab door openings shall be approximately 33.75" wide x 73" high. The front doors shall open approximately 75 degrees, and the rear doors shall open approximately 80 degrees.</p>		
<p>The doors shall be securely fastened to the doorframes with full-length, stainless steel piano hinges, with 3/8" (0.375") diameter pins for proper door alignment, long life, and corrosion resistance. Mounting hardware shall be treated with corrosion-resistant material prior to installation. For effective sealing, an extruded rubber gasket shall be provided around the entire perimeter of all doors.</p>		
<p>Stainless steel paddle-style door latches shall be provided on the interiors of the doors. The latches shall be designed and installed to protect against accidental or inadvertent opening as required by NFPA 1901.</p>		
<p>The front door windows shall provide a minimum viewing area of 530 sq. in. each. The rear door windows shall provide a minimum viewing area of 500 sq. in. each. All windows shall have 75% light transmittance automotive safety tint. Full roll-down windows shall be provided for the front cab doors with worm gear drive cable operation for positive operation and long life. Scissors or gear-and-sector drives are not acceptable.</p>		
<p><b>Cab Instruments and Controls</b></p>		
<p>Two (2) pantograph-style windshield wipers with two (2) separate electric motors shall be provided for positive operation. Air-operated windshield wipers are not acceptable because of their tendency to accumulate moisture, which can lead to corrosion or to freezing in cold weather. The wipers shall be a wet-arm type with a one (1) gallon washer fluid reservoir, an intermittent-wipe function, and an integral wash circuit. Wiper arm length shall be approximately 28", and the blade length approximately 20". Each arm shall have a 70 degree sweep for full coverage of the windshield.</p>		

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<p>An overhead mounted heater and defroster with a minimum capacity of 60,000 Btu/hr and all necessary controls shall be mounted in the cab. The airflow system shall consist of two (2) levels, defrost and cab, and shall have fresh air and defogging capabilities.</p> <p>Cab controls shall be located on the cab instrument panel in the dashboard on the driver's side where they are clearly visible and easily reachable. Emergency warning light switches shall be installed in removable panels for ease of service. The following gauges and/or controls shall be provided:</p> <ul style="list-style-type: none"> <li>• Master battery switch/ignition switch (rocker with integral indicator)</li> <li>• Starter switch/engine stop switch (rocker)</li> <li>• Heater and defroster controls with illumination</li> <li>• Marker light/headlight control switch with dimmer switch</li> <li>• Self-canceling turn signal control with indicators</li> <li>• Windshield wiper switch with intermittent control and washer control</li> <li>• Master warning light switch</li> <li>• Transmission oil temperature gauge</li> <li>• Air filter restriction indicator</li> <li>• Pump shift control with green "pump in gear" and "o.k. to pump" indicator lights • Parking brake controls with red indicator light on dash</li> <li>• Automatic transmission shift console</li> <li>• Electric horn button at center of steering wheel</li> <li>• Cab ajar warning light on the message center enunciator</li> </ul> <p>Controls and switches shall be identified as to their function by backlit wording adjacent to each switch, or indirect panel lighting adjacent to the controls.</p> <p><b>Fast Idle System</b></p> <p>A fast idle system shall be provided and controlled by the cab-mounted switch. The system shall increase engine idle speed to a preset RPM for increased alternator output.</p> <p><b>Electrical System</b></p> <p>The cab and chassis system shall have a centrally located electrical distribution area. All electrical components shall be located such that standard operations shall not interfere with or disrupt vehicle operation. An automatic thermal-reset master circuit breaker compatible with the alternator size shall be provided. Automatic-reset circuit breakers shall be used for directional lights, cab heater, battery power, ignition, and other circuits. An access cover shall be provided for maintenance access to the electrical distribution area.</p> <p>A 6 place, constantly hot, and 6 place ignition switched fuse panel and ground for customer-installed radios and chargers shall be provided at the electrical distribution area. Radio suppression shall be sufficient to allow radio equipment operation without interference.</p>		

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<p>All wiring shall be mounted in the chassis frame and protected from impact, abrasion, water, ice, and heat sources. The wiring shall be color-coded and functionally-labeled every 3” on the outer surface of the insulation for ease of identification and maintenance. The wiring harness shall conform to SAE 1127 with GXL temperature properties. Any wiring connections exposed to the outside environment shall be weather-resistant. All harnesses shall be covered in a loom that is rated at 280 degrees F to protect the wiring against heat and abrasion.</p> <p>A Vehicle Data Computer (VDC) shall be supplied within the electrical system to process and distribute engine and transmission Electronic Control Module (ECM) information to chassis system gauges, the message center, and related pump panel gauges. Communication between the VDC and chassis system gauges shall be through a 4 wire multiplexed communication system to ensure accurate engine and transmission data is provided at the cab dash and pump. The VDC shall be protected against corrosion, excessive heat, vibration, and physical damage.</p> <p>Two (2) dual rectangular sealed beam halogen headlights shall be installed on the front of the cab, one (1) on each side, mounted in a polished chrome-plated bezel. The low beam headlights shall activate with the release of the parking brake to provide daytime running lights (DRL) for additional vehicle conspicuity and safety. The headlight switch shall automatically override the DRL for normal low beam/high beam operation.</p> <p><b>Cab Crashworthiness Requirement</b></p> <p>The apparatus cab shall meet and/or exceed relevant NFPA 1901 load and impact tests required for compliance certification with the following:</p> <p><b><u>Side Impact Dynamic Pre-Load per SAE J2422 (Section 5).</u></b></p> <p>Testing shall meet and/or exceed defined test using 13,000 ft-lbs of force as a requirement. The cab shall be subject to a side impact representing the force seen in a roll-over. The cab shall exhibit minimal to no intrusion into the cab’s occupant survival space, doors shall remain closed and cab shall remain attached to frame.</p> <p>Cab testing shall be completed using 13,776 ft-lbs of force <b>exceeding</b> testing requirements.</p> <p><b><u>Quasi-static Roof Strength (proof loads) per SAE J2422 (Section 6) / ECE R29, Annex 3, paragraph 5.</u></b></p> <p>Testing shall meet and/or exceed defined test using 22,046 lbs of mass as a requirement. Testing shall be completed using platen(s) distributed uniformly over all bearing members of the cab roof structure.</p> <p>Cab testing shall be completed using 23,561 lbs of mass <b>exceeding</b> testing requirements. The cab shall exhibit minimal to no intrusion into the cab’s occupant survival space and doors shall remain closed.</p> <p>Additional cab testing shall be conducted using 117,336 lbs of mass <b>exceeding</b> testing requirements by <b>over five (5) times</b>. The cab shall exhibit minimal to no intrusion into the cab’s occupant survival space and the doors shall remain closed.</p>		

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<p><b><u>Frontal Impact per SAE J2420.</u></b></p> <p>Testing shall meet and/or exceed defined test using 32,549 ft-lbs of force as a requirement. The cab shall be subject to a frontal impact as defined by the standard. The cab shall exhibit minimal to no intrusion into the cab’s occupant survival space, doors shall remain closed and cab shall remain attached to frame.</p> <p>Cab testing shall be completed using 34,844 ft-lbs of force <b>exceeding</b> testing requirements.</p> <p>Additional cab testing shall be conducted using 65,891 ft-lbs of force <b>exceeding</b> testing requirements by <b>over two (2) times</b>.</p> <p>The cab shall meet all requirements to the above cab crash worthiness; <b>NO EXCEPTIONS</b>.</p> <p>A copy of a certificate or letter verifying compliance to the above performance by an independent, licensed, professional engineer shall be provided upon request.</p> <p>For any or all of the above tests, the cab manufacturer shall provide either photographs or video footage of the procedure upon request.</p>		
<p><b>ISO Compliance</b></p> <p>The manufacturer shall ensure that the construction of the apparatus cab shall be in conformance with the established ISO-compliant quality system. All written quality procedures and other procedures referenced within the pages of the manufacturer’s Quality Manual, as well as all Work Instructions, Workmanship Standards, and Calibration Administration that directly or indirectly impacts this process shall be strictly adhered to. By virtue of its ISO compliance the manufacturer shall provide an apparatus cab that is built to exacting standards, meets the customer’s expectations, and satisfies the customer’s requirements.</p>		
<p><b>CAB ROOF TYPE</b></p>		
<p><b>Raised Roof</b></p> <p>The rear portion of the cab roof shall be raised 12”. This will provide at least 5` 7” standing room. The front of the vista hood shall be sloped at 45 degrees from the vertical. The slope shall begin slightly in front of the centerline of the front axle to leave room for warning lights and air conditioning in front of the vista. The main roof extrusion shall extend up into the vista to strengthen the roof perimeter. Windows shall be provided on front, side, and rear unless otherwise specified.</p>		
<p>The rear door shall have an 85” vertical dimension for improved ingress/egress characteristics. The door shall be equipped with a dual striker bolt system.</p>		
<p><b>GRILLE</b></p>		

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	YES	NO
<p><b>Cab Grille</b></p> <p>The front cooling air intake grille shall be constructed of stainless steel mesh and supported by a 0.80” polished stainless steel frame providing no less that 81% open area for excellent cooling performance.</p>		
<p><b>CAB DOOR OPTIONS</b></p>		
<p><b>Rear Cab Door Position</b></p> <p>The cab rear doors shall be moved to the rear of the wheel opening. This door placement facilitates easier entry and egress by reducing the rear facing seat protrusion into the door opening.</p> <p>Rear door position to the 58” or (medium cab).</p>		
<p><b>Cab Door Windows</b></p> <p>Driver and officer door windows shall have the support pillar located toward the front of the window. There shall be a vent that can be opened and closed within the window itself, located towards the front.</p>		
<p><b>Cab Door Windows</b></p> <p>The front and rear cab door windows shall be manually operated to raise and lower.</p>		
<p><b>Cab Door Locks</b></p> <p>Each cab door shall have a manual operated door lock actuated from the interior of each respective door. Exterior of each cab door shall be provided with a barrel style keyed lock below the cab door handle.</p>		
<p><b>Cab Door Locks</b></p> <p>The cab shall have 1250 keyed door locks provided on exterior doors to secure the apparatus.</p>		
<p><b>Cab Door Panels</b></p> <p>The inner door panels shall be made from 14 gauge brushed finish stainless steel for increased durability. The cab door panels shall incorporate an easily removable panel for access to the latching mechanism for maintenance or service.</p>		
<p><b>Cab Door Exterior Latches</b></p> <p>All cab doors shall have ”L” style exterior door latches.</p>		

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<p><b>Cab Door Handle Scuff Plates</b></p> <p>A stainless steel scuff plate shall be installed at all cab door "L" handles for added paint protection.</p> <p><b>Door Mounted Flashing Lights</b></p> <p>There shall be four (4) door mounted Blue-LED flashing lights, one (1) per door. The lights shall be located on the interior of each cab door in the outboard position.</p> <p>Each light shall be activated by the cab door ajar circuit.</p> <p><b>Cab Door Reflective Material</b></p> <p>Reflective Red/Lemon Yellow material striping shall be supplied on each of the cab doors. The stripes shall be be angled from the lower outer corner to the upper inside corner, forming an "A" shape when viewed from the rear. The reflective material shall be at least 96 square inches to meet NFPA 1901 requirements.</p> <p><b>Cab Cabinet Door Trim</b></p> <p>A stainless steel trim shall be located at the bottom edge of the over cab wheel exterior compartment opening. The trim shall be made from 22 gauge stainless steel with a #4 brushed finish. The trim shall provide added protection of the painted surface of the cab when equipment is placed or removed from the compartment.</p> <p><b>Cab Exterior Door Steps (4)</b></p> <p>A step below the cab door shall be provided. The step shall be constructed of .188" aluminum tread brite. The step surface shall be provided with an aggressive skid-resistant surface. The step shall be in accordance with current NFPA requirements and shall include a multi-directional aggressive gripping surface incorporated into the diamond plate. Steps under front cab doors shall not interfere with approach angle.</p> <p><b>Cab Door Area Lighting</b></p> <p>There shall be four (4) clear TecNiq model T440 4" circular LED lights provided to illuminate the cab step well area. Each light shall be mounted in a resilient shock absorbent grommet and be located on each cab door in the inboard position. Each light shall be activated by the cab door ajar circuit.</p> <p><b>MIRRORS</b></p> <p><b>Mirrors, Heated</b></p>		

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	YES	NO
<p>The cab mirrors shall be heated.</p>		
<p><b>Cab Mirrors</b></p>		
<p>Two (2) Ramco model 6001FFR remote controlled aluminum mirrors shall be installed. The mirrors shall incorporate a full face main section with a convex mirror with housing model CAS750, mounted to the top. The adjustment of main sections shall be through dash mounted switches. The mirrors shall be heated as well as remote controlled. Location: mounted on front corners of cab.</p>		
<p><b>10in Convex Mirror</b></p>		
<p>A stainless steel 10" 3-Arm Convex mirror. (3) piece adjustable telescoping arm assembly and a 10" stainless steel center mounted convex head. Mirror shall be mounted horizontally above the officer's position to permit rapid viewing of the right front bumper.</p>		
<p><b>10in Convex Mirror</b></p>		
<p>A stainless steel 10" 3-Arm Convex mirror. (3) piece adjustable telescoping arm assembly and a 10" stainless steel center mounted convex head. Mirror shall be mounted horizontally above the driver's position to permit rapid viewing of the left front bumper.</p>		
<p><b>MISC EXTERIOR CAB OPTIONS</b></p>		
<p><b>Cab Canopy Window</b></p>		
<p>There shall be a fixed window provided between the front and rear doors on the driver's side of the cab.</p>		
<p><b>Front Mud Flaps</b></p>		
<p>Black linear low density polyethylene (proprietary blend) mud flaps shall be installed on the rear of the cab front wheel wells. The design of the mud flaps shall have corrugated ridges to distribute water evenly.</p>		
<p><b>Handrails</b></p>		
<p>Cab door assist handrails shall consist of two (2) 1.25" diameter x 18" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer door openings one each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces to assure a good grip for personnel safety. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.</p>		
<p><b>Handrails</b></p>		

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	YES	NO
<p>Cab door assist handrails shall consist of two (2) 1.25" diameter x 36" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer rear door openings one each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces to assure a good grip for personnel safety. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.</p>		
<p><b>Rear Cab Wall Construction</b></p>		
<p>The rear cab wall shall be constructed using formed 3/16" aluminum smooth plate interlocking in aluminum extrusions. The smooth plate shall match the cab paint scheme.</p>		
<p><b>HVAC</b></p>		
<p><b>Air Conditioning</b></p>		
<p>An overhead air-conditioner / heater system with a single radiator mounted condenser shall be supplied.</p>		
<p>The unit shall be mounted to the cab interior headliner in a mid cab position, away from all seating positions. The unit shall provide ten (10) comfort discharge louvers, four (4) to the back area of the cab and six (6) to the front. These louvers will be used for AC and heat air delivery. Two (2) additional large front louvers shall be damper controlled to provide defogging and defrosting capabilities to the front windshield as necessary.</p>		
<p>The unit shall consist of a high output evaporator coil and heater core with one (1) high output dual blower for front air delivery, and two (2) high performance single wheel blowers for rear air delivery.</p>		
<p>The control panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve. A three-speed blower switch shall control air speed.</p>		
<p>The condenser shall be radiator mounted and have a minimum capacity of 65,000 BTU's and shall include a receiver drier.</p>		
<p>Performance Data: (Unit only, no ducting or louvers)</p>		
<p>AC BTU: 55,000</p>		
<p>Heat BTU: 65,000</p>		
<p>CFM: 1300 @ 13.8V (All blowers)</p>		
<p>The compressor shall be a ten-cylinder swash plate type Seltec model TM-31HD with a capacity of 19.1 cu. in. per revolution.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The system shall be capable of cooling the interior of the cab from 100 degrees ambient to 75 degrees or less with 50% relative humidity in 30 minutes or less.</p> <p><b>Heat, Supplemental</b></p> <p>A single 40,000 BTU water heater shall be supplied in the front area of the cab. The unit shall heat the lower section of the driver`s and officer`s footwell.</p> <p>Dual 23,000 BTU water heaters shall be supplied in the rear of the cab to heat the rear cab lower section.</p> <p>Dual climate control will be achieved via dual switches installed on a front instrument panel. On units with optional multiplex display climate control, the floor heaters shall be controlled through the HVAC screen in the display.</p> <p><b>HVAC Control Location</b></p> <p>Heating and air conditioning controls shall be located in the driver side lower dash area, to the left side of the steering column.</p> <p><b>SEATS</b></p> <p><b>Seating</b></p> <p>All seats shall be Seats, Inc. 911 brand.</p> <p><b>Seat, Driver</b></p> <p>Seats, Inc 911 Battalion air suspension ABTS seat shall be supplied for the driver`s position.</p> <p>Features shall include:</p> <ul style="list-style-type: none"> <li>• 3-Inch suspension stroke</li> <li>• 3-Inch rear and 4 3/4-inch forward travel (7 3/4-inch total)</li> <li>• Towel bar adjust</li> <li>• Recline of 108 degrees</li> <li>• 20-Inch Wide Comfort Cushion with EVC (elastomeric vibration control) and D2 (dual density) foam</li> <li>• SRA (Side Release Airbag) capability</li> <li>• 3-Point Integral Red Seat Belt</li> <li>• 2-Way Lumbar</li> </ul> <p><b>SCBA Seats</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Four (4) Seats, Inc. 911 Battalion ABTS fixed SCBA seats shall be supplied, one each for the officer's position in front of the cab, the rear facing driver side seat and the (2) individual forward facing rear wall seats.</p> <p>Features shall include:</p> <ul style="list-style-type: none"> <li>• 97-Degree back with tracks</li> <li>• 3-Point side to side interchangeable seat belts with seat belt sensor</li> <li>• Comfort cushion <ul style="list-style-type: none"> <li>- with EVC (elastromatic vibration control)</li> <li>- with occupancy sensor</li> </ul> </li> <li>• Flip away headrests</li> <li>• Sculptured fit cushion back bolsters</li> </ul> <p><b>ReadyReach® seatbelt</b></p> <p>All seats shall include Seats, Inc. ReadyReach® seatbelts.</p> <p><b>Seat Fabric Color</b></p> <p>All seats shall be gray in color.</p> <p><b>Seating Capacity Tag</b></p> <p>A tag that is in view of the driver stating seating capacity of five (5) personnel shall be provided.</p> <p><b>SCBA Bracket SmartDock</b></p> <p>An IMMI SmartDock Gen2 SCBA storage bracket shall be provided for each SCBA seat. The SmartDock is a strap-free docking station that offers single-motion SCBA insertion and hands-free release when the firefighter stands up to exit the seat. SmartDock has undergone extensive testing to ensure that it meets or exceeds industry standards. When evaluated to the NFPA 1901 Standard for Automotive Fire Apparatus, SmartDock met requirements for retaining both the cylinder and the pack in dynamic testing.</p> <p><b>Seat Cover Material</b></p> <p>All seats shall have Turnout Tuff seat cover material.</p> <p><b>MEDICAL CABINETS</b></p> <p><b>Medical Storage Cabinet Finish</b></p> <p>The medical storage cabinet(s) shall have a Zolatone gray finish. The finish shall be applied to the interior, exterior, shelves (if equipped) and trays (if equipped) of the cabinet.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Medical Storage Cabinet</b></p> <p>There shall be one (1) medical storage cabinet provided over the officer side wheel well of the cab. The medical storage cabinet shall be constructed of 1/8" (.125") smooth aluminum plate. The medical storage cabinet shall be approximately 42" high x 22" wide x 28" deep.</p> <p>There shall be two (2) adjustable shelves provided in the medical storage cabinet. The shelves shall be constructed of 1/8" (.125") smooth aluminum plate. Each shelf shall have a 1" front and rear lip for strength and reinforcement. The shelves shall be sized to the interior dimensions of the medical storage cabinet.</p> <p>The medical storage cabinet shall be accessible externally of the cab by a locking double pan door and internally by a heavy duty black nylon cargo netting with a rear facing opening.</p> <p>The exterior door shall be constructed using a box pan configuration. The outer door pan shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. Inner door pan shall be constructed from 1/8" (0.125") smooth aluminum plate and shall have nutsert fittings to attach hold-open hardware. The inner pan shall have a 95-degree bend to form an integral drip rail.</p> <p>The exterior door shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the door to provide a seal that is resistant to oil, sunlight, and ozone.</p> <p>A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.</p> <p>A polished stainless steel Hansen D-ring style twist-lock door handle with a #459 latch shall be provided on the door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance. This door handle shall be located on the lower 1/3 of the door.</p> <p>The exterior door shall be securely attached to the apparatus cab with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the cab and exterior door with a dielectric barrier. The door shall be attached with machine screws threaded into the door frame. The door shall have a gas shock-style hold-open device.</p> <p>An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water run-off away from the compartment.</p> <p><b>MISC INTERIOR CAB OPTIONS</b></p> <p><b>Storage Under Rear SCBA Seats</b></p> <p>There shall be two (2) hinged doors provided; one (1) each side of the seat riser enabling access to store equipment below the rear seats.</p> <p><b>Cab Interior Color</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Cab instrument panel, overhead console, trim panels, headliner, and door panels shall be gray.</p>		
<p><b>Sun Visors</b></p>		
<p>Padded sun visors shall be provided for the driver and officer matching the interior trim of the cab and shall be flush mounted into the underside of the overhead console.</p>		
<p><b>Air Horn Lanyard</b></p>		
<p>There shall be a "Y" style lanyard mounted in the center of the cab that allows the driver and officer to operate the air horns. The lanyard shall activate an electrical air switch.</p>		
<p><b>Cab Dash - Severe Duty</b></p>		
<p>The center and officer side dash shall be constructed from .125" smooth aluminum plate painted to match the cab interior. A hinged access panel shall be provided on top of the center dash to provide easy access to components within.</p>		
<p>The lower kick panels below the dash to be constructed from .125" aluminum diamond plate. The panels shall be removable to allow for servicing components that may be located behind the panels.</p>		
<p><b>Rear wall tool mounting</b></p>		
<p>Pac Trac tool board mounting system shall be affixed to the rear wall of the cab 24" from the cab doors toward the center line on both sides of the cab.</p>		
<p><b>Engine Cover</b></p>		
<p>The engine cover shall blend in smoothly with the interior dash and flooring of the cab. The upper left and right sides shall have a sloped transition surface running front to rear providing increased space for the driver and officer.</p>		
<p>The engine cover and engine service access door cover shall be molded 18 lb/cu. ft. (+/-0.5) flexible integral skinned polyurethane foam at a Durometer of 60 (+/- 5.0) per ASTM F1957-99. The cover shall be approximately .5" thick with a minimum skin thickness of 0.0625 inches. The cover shall be provided to reduce the transmission of noise and heat from the engine. The cover shall be black and feature a pebble grain finish for slip resistance.</p>		
<p><b>CAB ELECTRICAL OPTIONS</b></p>		
<p><b>Cab Dome Lights</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>A Weldon LED dome light assembly with one (1) white lens and one (1) red lens and plastic housing shall be installed. The white light activates with appropriate cab door and light assembly switch, the red light activates with light assembly mounted switch only.</p> <p>There shall be two (2) mounted in the front of the cab, one (1) in the driver and one (1) in the officer ceiling.</p> <p>There shall be two (2) mounted in the rear of the cab, one (1) in the driver side and one (1) in the officer side ceiling.</p>		
<p><b>Horn Button Switch</b></p>		
<p>A two (2) position rocker switch shall be installed in the cab accessible to driver and properly labeled to enable operator to activate the OEM traffic horn or Federal Signal Q2B siren from the steering wheel horn button.</p>		
<p><b>Fans – Windshield</b></p>		
<p>Two (2) six inch diameter fans with black wire shrouds shall be ceiling mounted to the forward headliner, in the middle of the cab, to assist with window defrosting.</p>		
<p><b>Battery Charger Receptacle</b></p>		
<p>A 20 amp battery charger receptacle shall be installed in the specified location.</p> <p>The receptacle shall be located driver's door step area.</p> <p>The cover color shall be Yellow.</p>		
<p><b>English Dominant Gauge Cluster</b></p>		
<p>The cab operational instruments shall be located in the dashboard on the driver side of the cab and shall be clearly visible. The gauges in this panel shall be English dominant and shall be the following:</p> <ul style="list-style-type: none"> <li>• Speedometer/Odometer</li> <li>• Tachometer with integral hour meter</li> <li>• Engine oil pressure gauge with warning light and buzzer</li> <li>• Engine water temperature gauge with warning light and buzzer</li> <li>• Two (2) air pressure gauges with a warning light and buzzer (front air and rear air)</li> <li>• Fuel gauge</li> <li>• Voltmeter</li> <li>• Transmission oil temperature gauge</li> </ul> <p>This panel shall be backlit for increased visibility during day and night time operations.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Cab Turn Signals</b></p> <p>There shall be a pair of Whelen 600 LED (Light Emitting Diode) turn signal light heads with populated arrow pattern and amber lens mounted upper headlight bezel and wired with weatherproof connectors.</p> <p><b>Headlights</b></p> <p>The front of the cab shall have four (4) headlights. The headlights shall be mounted on the front of the cab in the lower position. The headlights shall be day time operational.</p> <p><b>Cab 12 Volt Outlet</b></p> <p>A plug-in type receptacle, with 3 individual receptacles, for hand held spotlights, cell phones, chargers, etc. shall be installed officer side dash. The receptacle shall be wired battery hot.</p> <p><b>Antenna Bases (2)</b></p> <p>There shall be two (2) Tessco P/N 90942 universal antenna base mounted on the cab roof with a weatherproof connector. The antenna base shall be NMO Motorola Style (equivalent to a MATM style). The antenna shall be located driver side rearward and officer side rearward with coaxial cable terminating at the center of the dash board.</p> <p><b>Battery Charger</b></p> <p>A LPC 20 battery charger with remote mounted LED display shall be installed.</p> <p>A fully automatic charging system shall be installed on the apparatus. The system shall have a 120 volt, 60 hertz, 7 amp AC input with an output of 20 amps 12 volts DC. The battery charging system shall be connected directly to the shoreline to ensure the batteries remain fully charged while the vehicle is in the fire station or firehouse.</p> <p>The system shall include a remote charging status indicator panel. The panel shall consist of two (2) LED lights to provide a visual signal if battery voltage is good or drops below 11.5 volts. The microprocessor shall be continuously powered from the battery to provide the charge status.</p> <p><b>Cab USB Charging Port</b></p> <p>A dual USB charging port for cell phones, chargers, etc. shall be installed officer side dash. The receptacles shall be wired battery hot.</p> <p><b>DPF Regeneration Override</b></p> <p>A momentary override switch shall be provided for the Diesel Particulate Filter (DPF) regeneration. The switch will inhibit the regeneration process until the switch is reset or the engine is shut down and restarted. The switch shall be located within reach of the driver.</p>		

## BODY COMPT LEFT SIDE

### Driver Side Assembly

The driver side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.

The driver side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" (0.188") wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

The driver side body shall be completely sanded and deburred to assure a smooth finish and painted job color.

### Driver Side Compartments

The three (3) driver side compartments shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 60" high.

There shall be one (1) compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 54" wide x 26" high.

There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 48" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 40 cu. ft. of combined storage space. The door opening shall be approximately 46" wide x 60" high.

Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.

An externally-mounted compartment top shall be provided and constructed of a 1/8" (.125") aluminum treadplate.

## BODY COMPT RIGHT SIDE

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Officer Side Assembly</b></p> <p>The officer side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.</p> <p>The officer side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" (0.188") wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.</p> <p>The officer side body shall be completely sanded and deburred to assure a smooth finish and painted job color.</p> <p><b>Officer Side Compartments</b></p> <p>The three (3) officer side compartments shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.</p> <p>There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 40" wide x 60" high.</p> <p>There shall be one (1) compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 54" wide x 26" high.</p> <p>There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 48" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 40 cu. ft. of combined storage space. The door opening shall be approximately 46" wide x 60" high.</p> <p>Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.</p> <p>An externally-mounted compartment top shall be provided and constructed of a 1/8" (.125") aluminum treadplate.</p> <p><b>BODY COMPT REAR</b></p> <p><b>Rear Body Compartment</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The rear body shall be constructed entirely of aluminum extrusions and interlocking aluminum plates and includes a lower full height center rear compartment.</p>		
<p>The rear body frame shall be 6063-T5 1.5" x 4" and 1.5" x 3" aluminum extrusions with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius and 1/8" (0.125") aluminum plate. The rear extrusions shall be welded both internal and external at each joint using an aluminum alloy welding wire.</p>		
<p><b>Rear Body Compartment</b></p>		
<p>The rear compartment shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartment shall be modular in design and shall not be a part of the body support structure.</p>		
<p>The compartment shall be approximately 38" wide x 30" high and as deep as applicable to required tank design per application. The door opening shall be approximately 38" wide x 30" high. This compartment shall be transverse through to the side rear compartments.</p>		
<p>The compartment seams shall be sealed using a permanent pliable silicone caulk. Machined louvers shall be provided for adequate ventilation.</p>		
<p><b>Angled Tailboard Corners</b></p>		
<p>The corners of the rear tailboard shall be angled at 45 degrees inward for increased clearance around the rear of the apparatus.</p>		
<p><b>Tailboard</b></p>		
<p><b>Tailboard Step</b></p>		
<p>A tailboard step shall be provided at the rear of the body. The tailboard shall 14" in depth and in accordance with NFPA in both step height and stepping surface. The maximum rear step height to the tailboard shall not exceed 24".</p>		
<p>The tailboard step shall be formed from 3/16" (0.188") aluminum treadplate and shall be reinforced with 6063-T5 1.5" x 3" aluminum extrusion. The tailboard shall be in accordance with current NFPA requirements and shall include a multi-directional aggressive gripping surface incorporated into the diamond plate. The gripping surface shall protrude from the diamond plate sheet a minimum of 1/8" (0.125"). Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".</p>		
<p>The tailboard step shall be bolted on to the body from the underside assuring a clear surface and shall be easily removable for replacement in the case of damage.</p>		
<p><b>Rear Access Handrails</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Handrails shall be provided at the rear of the body to assist ground personnel accessing the tailboard step and hosebed area. Each handrail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, and shall be mounted between chrome stanchions.</p> <p>The handrails shall be located- two (2) handrails, one (1) on each side, appropriately sized handrail mounted vertical on the trailing edge of the body and appropriately sized handrail(s) mounted horizontal below the rear hosebed opening.</p>		
<h2>DOORS</h2>		
<h3>Painted Roll Up Compartment Door</h3>		
<p>A ROM brand roll up door painted job color shall be provided on a compartment. The door(s) shall be installed in the following location(s): L1,L2, L3, R1, R2 and R3.</p>		
<p>The Robinson door slats shall be double wall box frame and manufactured from anodized aluminum. The slats shall have interlocking end shoes on each slat. The slats shall have interlocking joints with a PVC/vinyl inner seal to prevent any metal to metal contact and inhibit moisture and dust penetration.</p>		
<p>The track shall be painted aluminum with a finishing flange incorporated to provide a finished look around the perimeter of the door without additional trim or caulking. The track shall have a replaceable side seal to prevent water and dust from entering the compartment.</p>		
<p>The doors shall be counterbalanced for ease in operation. A full width latch bar shall be operable with one hand, even with heavy gloves. Securing method shall be a positive latch device.</p>		
<p>A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.</p>		
<h3>Double Compartment Door B1</h3>		
<p>Double compartment doors shall be constructed for the B1 compartment using a box pan configuration. The outer door pans shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. The inner door pans shall be constructed from 3/32" (0.090") smooth aluminum plate and shall have nutsert fittings to attach hold-open hardware. The inner pans shall have a 95-degree bend to form an integral drip rail.</p>		
<p>The compartment doors shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the doors to provide a seal that is resistant to oil, sunlight, and ozone.</p>		
<p>A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>A polished stainless steel Hansen D-ring style twist-lock door handle with #459 latch shall be provided on the primary door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance.</p>		
<p>The secondary door shall have a dual stage rotary latch with a 750 lb rating to hold the door in the closed position. The latch shall be mounted at the top of the door. A stainless steel paddle style handle shall be mounted on the interior pan of the door to actuate the rotary latch. The paddle handle shall be connected to the rotary latch by a 5/32" (.156") diameter rod. Cable actuation shall be deemed un-acceptable due to the potential for cable stretch and slippage. The striker pin shall be 3/8" (.38") diameter with slotted mounting holes for adjustment.</p>		
<p>The compartment doors shall be securely attached to the apparatus body with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the body and compartment doors with a dielectric barrier. The doors shall be attached with machine screws threaded into the doorframe.</p>		
<p>The doors shall have a gas shock-style hold-open device. The gas shocks shall have a 30 lb rating and be mounted near the top of the door (when possible).</p>		
<p>An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water runoff away from the compartment.</p>		
<p><b>SHELVES</b></p>		
<p><b>Permanent Shelf</b></p>		
<p>There shall be a permanent mounted aluminum shelf provided for compartment L3 and R3 at offset in compartment depths.</p>		
<p>The shelf shall be constructed of 3/16" (.187") smooth aluminum plate. The shelf shall have a minimum 2" front lip for added strength and reinforcement and to accommodate optional plastic interlocking compartment tile systems.</p>		
<p>The shelf shall be capable of holding 100 lbs.</p>		
<p><b>Adjustable Shelf (1)</b></p>		
<p>There shall be an aluminum adjustable shelf provided for compartment L1 in the lower area forward of the vertical divider.</p>		
<p>The shelf shall be constructed of 3/16" (.187") smooth aluminum plate. The shelf shall have a minimum 2" front and rear lips to accommodate optional plastic interlocking compartment tile systems. For additional strength and reinforcement of the shelf a return break shall be provided on the outward lip. The adjustable shelf shall be capable of holding 250 lbs.</p>		

The shelf shall be sized, width and depth, to match the size and location in the compartment.

## COMPARTMENT DIVIDERS

### Partition Vertical Bolt-In

A bolt in aluminum smooth plate vertical partition shall be provided in the lower section of compartment L1. It shall be located 20 inches forward of the rear compartment wall.

## TRAYS / TOOLBOARDS

### Toolboard

The back wall of L1, L3 and R3 in the upper area shall have PAC TRAC tool mounting provided. in addition to the rear wall of the cab 24” from the cab doors toward the center line on both sides of the cab.

### SCBA Bracket

A SCBA bracket shall be installed on the back wall of the upper area of the L1 compartment to accommodate the Driver’s SCBA.

### Roll-Out Tray

There shall be a floor mounted roll-out tray provided in compartment L3.

The roll-out tray shall be constructed of 3/16” (.187”) smooth aluminum plate with a sanded finish and welded corners for increased strength and rigidity. The tray shall be sized in width and depth as applicable.

For greater tray accessibility, the drawer slides shall feature one hundred percent extension. The tray shall utilize a gas spring to secure the tray in the open or closed position.

The tray shall have a total capacity of 500 lbs.

## COVERS

### Hose Bed Cover

A cover constructed of Black 18 oz. PVC vinyl coated polyester shall be installed over the apparatus hose bed. The base fabric shall be 1000 x 1300 Denier Polyester with a fabric count of 20 x 20 square inch.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The front edge of the cover shall be mechanically attached to the body. The sides of the cover shall be held in place with heavy-duty Velcro strips running the length of the hose bed.</p>		
<p><b>Rear Hose Bed Cover</b></p> <p>A cover constructed of heavy-duty black nylon cargo netting shall be installed at the rear apparatus hose bed.</p> <p>The bottom of the cargo netting shall be mechanically attached to the hose bed. The cover shall be attached to comply with the latest edition of NFPA 1901.</p> <p>The Cover shall secure the hoseload at the rear open back of the hosebed and shall be separate from the top cover of vinyl-</p>		
<p><b>Crosslay Cover</b></p> <p>A crosslay cover shall be provided for the crosslay storage area of the pump module. The crosslay cover shall be provided in compliance with NFPA 1901.</p> <p>The crosslay cover shall be constructed from 3/16" (.187") aluminum treadplate. The cover shall include a full-length stainless steel 1/4" (0.25") rod piano-type hinge. The cover shall be hinged to open and not interfere with applicable plumbing components on the apparatus.</p> <p>The crosslay cover shall include applicable grab handle(s) and two (2) hold downs to secure the cover in the closed position.</p>		
<p><b>Crosslay Cover - Sides</b></p> <p>A pair of covers constructed of heavy-duty black nylon cargo netting shall be installed over the side openings of the apparatus crosslay.</p> <p>The covers shall be secured in place to comply with the latest edition of NFPA 1901.</p>		
<p><b>Hold Open</b></p> <p>Hold open device(s) shall be provided for aluminum crosslay (single or bi-fold) cover.</p>		
<p><b>PUMP MODULE</b></p>		
<p><b>Pump Module</b></p>		
<p><b>Pump Module Frame</b></p> <p>An extruded aluminum pump module shall be provided and located forward of the apparatus body. The pump module shall be constructed entirely of welded aluminum alloy extrusions and</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>interlocking aluminum plates. The pump module framework shall consist of 1.5" x 3" x .188" wall, 1.5" x 3" x .375" wall with center web and 3" x 3" x .188" wall extrusions.</p> <p>The pump module design and mounting shall be separate from the body to allow the pump module and body to move independently of each other in order to reduce stress from frame twisting and vibration.</p> <p>The exterior surface of the pump module framework shall have a sanded finish.</p>		
<p><b>Pump Module Mounting</b></p>		
<p>The pump module shall be attached to the chassis using four (4) center bonded isolation mounts and a steel mounting frame. The isolation mounts shall be 2.75" diameter and mount to the chassis with two (2) 4" x 4" x .312" A36 steel angles.</p>		
<p><b>Pump Access</b></p>		
<p>A pump service access door shall be provided at the front of the pump module. The door shall be secured with two (2) thumb latches. (Access door not provided on fixed cab applications)</p>		
<p><b>Pump Module Running Boards</b></p>		
<p>The pump module shall include a running board on each side. The running boards shall be in accordance with NFPA in both step height and stepping surface. The running boards shall be formed from .125" aluminum treadplate.</p>		
<p><b>Stepping Surface</b></p>		
<p>Each running board shall include a multi-directional, aggressive gripping surface incorporated into the treadplate. The surface shall extend vertically from the diamond plate sheet a minimum of .125". Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4". Each running board shall be bolted on to the pump module and be easily removable for replacement in the case of damage.</p>		
<p><b>PUMP PANELS</b></p>		
<p><b>Side Mount Pump Panels</b></p>		
<p>The driver and officer side pump panels shall be constructed of 14 gauge stainless steel. Each panel shall have the ability to be removed from the module for easier access and for maintenance in the pump area.</p>		
<p><b>Hinged Gauge Panel</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The driver side stainless steel single gauge panel shall be positioned where it can be opened downward for access to gauges and other interior pump module mounted items. The gauge panel shall include latches to secure the panel in the closed position. Two (2) cable tethers shall be provided to hold the panel in the open position.</p>		
<p><b>Pump Access Door</b></p>		
<p>The officer side pump module shall have a three (3) piece panel, one (1) above the discharge outlets, one (1) encompassing the discharges and intakes and one (1) low for bleeder valves.</p>		
<p>The upper two (2) pump panel sections shall have a <u>vertical</u> stainless steel piano type hinge with 1/4" pins along the forward edge of the pump module. The hinges shall be "staked" on every other knuckle to prevent the pin from sliding. The panels shall have push button style latches to secure the panels in the closed position. The upper panel shall have one (1) pneumatic shock to hold the panel in the open position.</p>		
<p><b>MISC PUMP PANEL OPTIONS</b></p>		
<p><b>Special Color Pump Panel Tags</b></p>		
<p>The pump panel tags shall be color coded per customer specifications.</p>		
<p><b>PUMP MODULE OPTIONS</b></p>		
<p><b>Pump Compartment Heaters</b></p>		
<p>Two (2) 24,000 BTU heaters shall be installed in the lower pump compartment area. The heaters shall be connected to the chassis engine coolant system and shall include 12 volt blowers. The heaters shall be controlled at the pump operator`s panel.</p>		
<p><b>Flex Joint</b></p>		
<p>The area between the pump modules and body shall include a rubber flex joint.</p>		
<p><b>Air Horn Switch</b></p>		
<p>A heavy duty weatherproof push-button switch shall be installed at the pump operator`s panel to operate the air horns.</p>		
<p>The switch shall be labeled "Evacuation Alert".</p>		
<p><b>Triple Crosslay Hosebed</b></p>		
<p>Three (3) crosslay hosebeds shall be provided on the pump module. The two (2) forward crosslay areas shall each have a capacity for up to 250' of 1 3/4" double jacket fire hose single</p>		

stacked with nozzle. The rearward crosslay area shall have a capacity for up to 200` of 2.5" double-jacket fire hose single stacked. The crosslay floor and side walls shall be constructed of 3/16" (.188) smooth aluminum plate. The floor shall be slotted to prevent the accumulation of water and allow for ventilation of wet hose. Two (2) 1/4" (.25") smooth aluminum plate fixed dividers with a sanded finish shall be provided to separate the three (3) hose storage areas.

**Crosslay(s) Dimensions**

Crosslay(s) height shall be a maximum of 68" inches form the ground. The 1 3/4" inch crosslays shall be 4-1/2 inches clear width and the 2-1/2 inch crosslay 5-1/2 inches clear width.

**Storage Pan**

A storage pan shall be provided in the upper pump module area. The pan shall be constructed of 3/16" (.188") aluminum treadplate and be removable to service items in the pump module below. Holes shall be provided in the corners of the pan to facilitate drainage of water.

**WATER TANK**

**780 Gallon Water Tank**

A 780 gallon (U.S.) "L" style booster tank shall be supplied to enable a low rear hosebed.

The booster tank shall be constructed of polypropylene material. The booster tank shall be completely removable without disturbing or dismounting the apparatus body structure. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal.

The booster tank top, sides, and bottom shall be constructed of a minimum 1/2" (0.50") thick black UV-stabilized copolymer polypropylene. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The tank cover shall be constructed of 1/2" thick polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions.

The tank shall have a combination vent and manual fill tower with a hinged lid. The fill tower shall be constructed of 1/2" polypropylene and shall be a typical dimension of 8" x 8" outer perimeter (subject to change for specific design applications). The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 1/4" thick removable

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>polypropylene screen and a polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid.</p> <p>The booster tank shall have two (2) tank plumbing openings. One (1) for a tank-to-pump suction line with an anti-swirl plate, and one (1) for a tank fill line. 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 per the tank fill inlet size.</p> <p>The sump shall be constructed of a minimum of 1/2" polypropylene. The sump shall have a minimum 3" N.P.T. threaded outlet for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.</p> <p>The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength.</p> <p>Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with an I.D. of 3" or larger that is designed to run through the tank. This outlet shall direct the draining of overflow water past the rear axle, thus reducing the possibility of freeze-up of these components in cold environments. This drain configuration shall also assure that rear axle tire traction shall not be affected when moving forward.</p> <p>The booster tank shall undergo extensive testing prior to installation in the truck. All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale.</p> <p>Each tank shall be weighed empty and full to provide precise fluid capacity. Each tank shall be delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification. The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.</p> <p>A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.</p> <p>The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from the tank manufacturer.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Tank capacity is 780 US gallon / 649 Imperial gallons / 2952 Liters.</p>		
<p><b>Fill Tower Location</b></p>		
<p>Fill tower(s) shall be located offset to officer side of water tank.</p>		
<p><b>TANK PLUMBING</b></p>		
<p><b>Tank Fill 2 Akron Valve</b></p>		
<p>One (1) 2” pump-to-tank fill line having a 2” manually operated full flow valve. The valve control shall be located at the pump operator’s panel and shall visually indicate the position of the valve at all times. The fill line shall be controlled using a chrome handle with an integral tag.</p>		
<p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.</p>		
<p>The valve shall be of unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		
<p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p>		
<p><b>Tank To Pump</b></p>		
<p>One (1) manually operated 3” Akron valve shall be installed between the pump suction and the booster tank. Includes flex hose with stainless steel hose clamps for connection to the 4" tank sump outlet. The valve control shall be located at the pump operator’s panel and shall visually indicate the position of the valve at all times.</p>		
<p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.</p>		
<p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		
<p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.</p>		
<p><b>LADDER STORAGE / Hi Rise Pack Storage</b></p> <p><b>Hose Bed Officer Side Tunnel Storage</b></p> <p>An officer side vertical ladder storage tunnel shall be provided. The tunnel shall be for use with a low hose bed. Tunnel shall hold: 2-section 24' Duo-Safety brand, 14' roof Duo-Safety brand, 10' attic and (2) pike poles. The tunnel shall include a vertical hinged rear diamond plate door with a push-button latch.</p> <p><b>Ladder Brand</b></p> <p>The ladder brand capable of being carried on the unit shall be Duo-Safety.</p> <p><b>Transverse Modification - Sleeve for Little Giant</b></p> <p>A vertically oriented sleeve shall be constructed through the rear officer side compartment into the rear compartment to accommodate a Little Giant Model 17 ladder stored on its beam. A Little Giant Model 17 Ladder shall be provided. It shall include a strap to secure the ladder and appropriate spacer/stop.</p> <p><b>Storage Boxes Vertical</b></p> <p>Three (3) storage boxes shall located to the officer side of hosebed. They shall be designed to hold hi-rise packs. They shall have nylatron flooring. Stops will be included as needed for storage content. The Boxes shall be stacked vertically against the hose bed officer side ladder tunnel storage. From bottom to top the boxes shall be 10" wide, 12" high, full depth of the hose bed; 10" wide, 12" high, full depth of the hose bed; and 10 wide, raised to a height even with the top of the Officer's side ladder tunnel, full depth of the hose bed. The boxes shall be open on both horizontal ends to allow for ventilation. The rear hose bed cover cargo netting shall prevent the contents of the storage boxes from sliding out.</p> <p><b>Storage Box Vertical Hosebed Style Top</b></p> <p>Storage box located officer side hosebed shall have hosebed style top. The top of the storage box shall be constructed entirely from maintenance-free, 3/4" deep x 7.5" wide, extruded aluminum slats that shall be pop-riveted into a one-piece grid system. Each slat shall have all sharp edges removed and have an anodized ribbed top surface that shall prevent the accumulation of water and allow for ventilation of wet hose. If applicable, the hosebed style top design shall incorporate adjustable tracks in the forward and rearward area of the for the installation of an adjustable divider(s).</p>		

## HANDRAILS / STEPS

### Hose Bed Folding Steps

Innovative Controls dual lighted LED folding steps shall be positioned on both the driver and officer side rear of the body. The steps shall be NFPA compliant for access to the hose bed storage area and in step height and surface area. The steps shall be staggered stepped as applicable with tailboard depth, not applicable with recessed step mounting.

Innovative Controls dual lighted folding step with LED lights integral to the step on the top to provide NFPA requirements of 2 fc (20 lx) on the stepping surface. Folding step shall also have a LED light integral to the bottom of the step to meet NFPA requirements of a stepping surface up to 18" below the step. The folding step shall sustain a minimum static load of 500 lb with a 3 to 1 safety factor. The folding step shall also meet NFPA slip resistance qualifications. Corrosion resistance shall be demonstrated by a 1000 hr salt spray test with no visible signs of deterioration of the step body or hardware.

Hand rails shall be installed (as applicable) in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

### Folding Steps [Qty: 4]

Innovative Controls dual lighted LED folding step(s) shall be located at both the driver and officer side front compartment face to assist with accessing the crosslays. The folding step(s) shall meet current NFPA in step height and surface area.

Innovative Controls dual lighted LED folding step with LED lights integral to the step on the top to provide NFPA requirements of 2 fc (20 lx) on the stepping surface. Folding step shall also have a LED light integral to the bottom of the step to meet NFPA requirements of a stepping surface up to 18" below the step. The folding step shall sustain a minimum static load of 500 lb with a 3 to 1 safety factor. The folding step shall also meet NFPA slip resistance qualifications. Corrosion resistance shall be demonstrated by a 1000 hr salt spray test with no visible signs of deterioration of the step body or hardware.

Handrails shall be installed in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

## MISC BODY OPTIONS

### Rear Mud Flaps

The rear tires shall have a set of black mud flaps mounted behind the rear chassis wheels.

**Body Height and Mainframe Construction**

The body mainframe shall be entirely constructed of aluminum. The complete framework shall be constructed of 6061T6 and 6063T5 aluminum alloy extrusions welded together using 5356 aluminum alloy welding wire.

The body mainframe shall include 3" x 3" 6061-T6 aluminum 3/8" (0.375") wall crossmember extrusion or 3" x 3" I-beam section aluminum extrusion depending on the application at the front of the body . A solid 3" x 3" "I-beam" section aluminum extrusion shall be provided the full width of the body forward and rearward of the rear wheel well. The crossmembers shall be designed to support the compartment framing and shall be welded to 1-3/16" x 3" (1.188" x 3") solid 6063-T5 aluminum frame sill extrusions. The frame sill extrusions shall be shaped to contour with the chassis frame rails and shall be protected from contact with the chassis frame rails by 5/16" x 2" (0.31" x 2") fiber-reinforced rubber strips to prevent wear and galvanic corrosion caused when dissimilar metals come in contact.

**Body Mounting System**

The main body shall be attached to the chassis frame rails with six (6) of 5/8" (0.625") diameter steel U-bolts. This body mounting system shall be used to allow easy removal of the body for major repair or disassembly.

**Water Tank Mounting System**

The body design shall allow the booster tank to be completely removable without disturbing or dismantling the apparatus body structure. The water tank shall rest on top of a 3" x 3" frame assembly covered with rubber shock pads and corner braces formed from 3/16" angled plate to support the tank. The booster tank mounting system shall utilize a floating design to reduce stress from road travel and vibration. To maintain low vehicle center of gravity the water tank bottom shall be mounted within 5" of the frame rail top.

**Hosebed Side Assembly**

The hosebed side assemblies shall be made of 3" x 3" slotted aluminum extrusion and 3/16" (.188") smooth plate. The hosebed side assemblies shall provide a 90" high body.

The exterior hosebed side surface shall be completely sanded and deburred to assure a smooth finish and painted job color. The interior hosebed side surface shall be completely sanded and deburred to assure a smooth sanded finish.

**Hosebed**

The area above and rearward of the booster tank shall have a LOW hose storage area provided. The hosebed shall be constructed entirely from maintenance-free, 3/4" deep x 7.5" wide, extruded aluminum slats that shall be pop-riveted into a one-piece grid system. Each slat shall

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	YES	NO
<p>have all sharp edges removed and have an anodized ribbed top surface that shall prevent the accumulation of water and allow for ventilation of wet hose.</p> <p>The hosebed shall include an open area for the fill tower(s). The hosebed design shall incorporate adjustable tracks in the forward area rearward of the fill tower(s) and the rearward area of the hosebed for the installation of an adjustable divider(s). The adjustable tracks shall hold an adjustable divider(s) mounting nut straight, so only a philips head screwdriver is required to adjust a divider(s) from side to side (as is practical with other hosebed mounted equipment).</p> <p>The hosebed shall be easily removable to allow access to the booster tank below.</p>		
<p><b>Hose Bed Divider [Qty: 4]</b></p> <p>There shall be (4) hose bed dividers provided the full fore-aft length of the hose bed.</p> <p>The hose bed divider shall be constructed of 1/4" (0.25") smooth aluminum plate with an extruded aluminum base welded to the bottom. The rear end of the divider shall have a 3" radius corner to protect personnel. The divider shall be natural finish aluminum for long-lasting appearance and shall be sanded and de-burred to prevent damage to the hose.</p> <p>The divider shall be adjustable from side to side in the hose bed to accommodate varying hose loads.</p>		
<p><b>Hose Bed Divider Hand Hold</b></p> <p>There shall be a hand hole cut-out(s) on the trailing edge of each hose bed divider. The cut-out(s) is specifically sized for use in adjusting of the hose bed divider.</p> <p><b>Divider Support</b></p> <p>A hosebed divider Support shall run full width of hosebed (side to side) at the front of the hosebed and towards the rear of the hosebed at top of the divider(s).</p>		
<p><b>Fuel Fill</b></p> <p>A recessed fuel fill shall be provided at the driver side rear wheel well area.</p>		
<p><b>Body Wheel Well</b></p> <p>The body wheel well frame shall be constructed from 6063-T5 aluminum extrusion with a slot the full length to permit an internal fit of 1/8" (0.125") aluminum treadplate. The wheel well trim fenderett shall be constructed from 6063-T5 formed aluminum extrusion. The wheel well</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>liners shall be constructed of a 3/16" (.187") composite material. The liners shall be bolt-on and shall provide a maintenance-free and damage-resistant surface.</p>		
<p><b>Rub Rail</b></p>		
<p>The pump area module(s) and body shall have rub rails mounted along the sides and at the rear.</p>		
<p>The rub rail shall be C-channel in design and constructed of 3/16" thick 6463T6 anodized aluminum extrusion. The rub rail shall be 2.75" high x 1.25" deep and shall extend beyond the body width to protect compartment doors and the body side. The rub rail depth shall allow marker and/or warning lights to be recessed inside for protection.</p>		
<p>The top surface of the rub rail shall have minimum of five (5) raised serrations. Each serration being a minimum of .1" in height and with cross grooves to provide a slip-resistant edge for the tailboard step and pump module running board areas. The rub rail shall be mounted a minimum of 3/16" off the pump module and body with nylon spacers. The ends of each section shall be provided with a finished rounded corner piece.</p>		
<p><b>SCBA BOTTLE STORAGE</b></p>		
<p><b>SCBA BOTTLE STORAGE</b></p>		
<p>SCBA bottle storage areas constructed with aluminum plate with hinged door and push button latch shall be provided in the body wheel well area. Storage for six (6) <del>ten (10)</del> bottles shall be provided, 3 forward, 1 rearward driver side. The officer side wheel well shall be configured to accommodate 1 – 2.5 gallon air pressurized water fire extinguisher and 1- 20# stored pressure dry chemical extinguisher, and 1 SCBA bottle, forward of the wheel well. The rear area of wheel well shall be configured to accommodate a 10# carbon dioxide extinguisher and two (2) SCBA bottles.</p>		
<p>The door shall match wheel well area material and finish.</p>		
<p>The door shall cover the recessed fuel fill if located adjacent to the SCBA storage.</p>		
<p>U-shaped trough made out of aluminum smooth plate with rubber insert shall be provided to store SCBA bottles.</p>		
<p><b>SCBA Strap</b></p>		
<p>Straps shall be provided in each exterior storage compartment to provide secondary means to hold each SCBA bottle in the compartment. The straps shall be constructed from 1" nylon webbing formed in a loop. The strap(s) shall be mounted to the storage compartment ceiling directly inside the door opening at each bottle location.</p>		
<p><b>PUMPS</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Pump Rating</b></p> <p>The fire pump shall be rated at 1500 GPM.</p> <p><b>Fire Pump System</b></p> <p>The pump shall be a midship mounted Waterous CSU 1500-2250 single stage centrifugal pump. The pump shall be mounted on the chassis frame rails and shall be split-shaft driven.</p> <p>The entire pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 psi (207 (MPa). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump body shall be horizontally split in two (2) sections, for easy removal of impeller assembly including wear rings and bearings from beneath the pump without disturbing pump mounting or piping.</p> <p>The pump impeller shall be hard, fine grain bronze of the mixed flow design and shall be individually ground and hand balanced. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.</p> <p>The impeller shaft shall be stainless steel, accurately ground with a 2-3/4" diameter spline shaft, and shall be rigidly 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 remaining bearings shall be heavy duty, deep groove ball bearings in the gearbox and shall be splash lubricated. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.</p> <p>Two (2) 6" diameter suction ports with 6" NST male threads and removable screens shall be provided, one each side. The ports shall be mounted one on each side of the midship pump and shall extend through the side pump panels. Inlets shall come equipped with long handle chrome caps.</p> <p>Stuffing boxes shall be integral with the pump body and be equipped with two-piece glands to permit adjustment or replacement of packing without disturbing pump. Lantern rings shall be located at inner ends of stuffing boxes so that all rings of packing can be removed without removal of the lantern rings. Water shall be fed into stuffing box lantern rings for proper lubrication and cooling when pump is operating.</p> <p><b>Discharge Manifold</b></p> <p>The pump system shall utilize a stainless steel discharge manifold system that allows a direct flow of water to all discharge valves. The manifold and fabricated piping systems shall be constructed of a minimum of Schedule 10 stainless steel to reduce corrosion.</p> <p><b>Pump Shift</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The pump shift shall be pneumatically controlled using a power shifting cylinder.</p> <p>The power shift control valve shall be mounted in the cab, to the right of the steering column and be labeled "PUMP SHIFT". The apparatus transmission shift control shall be furnished with a positive lever, preventing accidental shifting of the chassis transmission.</p> <p>A green indicator light shall be located in the cab, and be labeled "PUMP ENGAGED". The light shall not activate until the pump shift has completed its full travel into pump engagement position.</p> <p>A second green indicator light shall be located in the cab and be labeled "OK TO PUMP". This light shall be energized when both the pump shift has been completed and the chassis automatic transmission has obtained converter lock-up (4th gear lock-up).</p> <p><b>Test Ports</b></p> <p>Two (2) test plugs shall be pump panel mounted for third party testing of vacuum and pressures of the pump.</p>		
<p><b>PUMP CERTIFICATION</b></p> <p><b>Pump Certification</b></p> <p>The pump, when dry, shall be capable of taking suction and discharging water in accordance with current NFPA 1901. The pump shall be tested at the manufacturer's facility by an independent, third-party testing service. The conditions of the pump test shall be as outlined in current NFPA 1901.</p> <p>The tests shall include, at a minimum, the pump test, the pumping engine overload test, the pressure control system test, the priming device tests, the vacuum test, and the water tank to pump flow test as outlined in current NFPA 1901.</p> <p>A piping hydrostatic test shall be performed as outlined in current NFPA 1901.</p> <p>The pump shall deliver the percentage of rated capacities at pressures indicated below:</p> <p>100% of rated capacity at 150 psi net pump pressure  100% of rated capacity at 165 psi net pump pressure  70% of rated capacity at 200 psi net pump pressure  50% of rated capacity at 250 psi net pump pressure</p> <p>A test plate, installed at the pump panel, shall provide the rated discharges and pressures together with the speed of the engine as determined by the certification test, and the no-load governed speed of the engine.</p>		

A Certificate of Inspection certifying performance of the pump and all related components shall be provided at time of delivery. Additional certification documents shall include, but not limited to, Certificate of Hydrostatic Test, Electrical System Performance Test, Manufacturer’s Record of Pumper Construction, and Certificate of Pump Performance from the pump manufacturer.

## **PUMP OPTIONS**

### **Steamers, Flush+1**

The pump 6" steamer intakes shall be mounted approximately 1” from the pump panel to back of cap when installed. The "Flush+1" dimension can vary + or - 1-1/4" or as practicable depending on the pump module width and options selected.

### **Pump Seal Packing, Waterous**

A pump packing shall be supplied with the pump and shall include stuffing boxes which shall be integral with the pump body and be equipped with two-piece glands to permit adjustment or replacement of packing without disturbing pump. Lantern rings shall be located at inner ends of stuffing boxes so that all rings of packing can be removed without removal of the lantern rings. Water shall be fed into stuffing box lantern rings for proper lubrication and cooling when pump is operating.

### **Monarch Waterous Electric Actuated Valve**

A Waterous Monarch valve shall be provided for each side intake. The inlet valve shall be operated by a 12 VDC electric motor with a remote switch provided at the pump operator’s position. The 12 VDC motor shall be provided with an automatic resetting, thermally-compensated over-current protection circuit breaker to protect the 12 VDC motor and apparatus electrical system. The gear actuator on the valve will cycle from full closed to full open in not less than three (3) seconds. A manual override shall be provided behind the officer side panel. An indicator light panel shall be located at the pump operators position to show valve open, closed, or traversing from open to closed.

A adjustable pressure relief valve shall be provided. The pressure relief valve shall be factory set to 150 -psi. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed.

A 1/4” air bleeder valve shall be provided and controlled at the pump operator’s position.

A 3/4” water bleeder shall be supplied and controlled at the pump panel position.

### **Master Drain Valve**

A manual master drain valve shall be installed on the pump panel. The master pump drain assembly shall consist of a Class 1 bronze master drain with a rubber disc seal. The master drain shall have a rubber seal to prevent water from running out on the running board.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The manual master drain valve shall have twelve (12) individual-sealed ports that allow quick and simultaneous draining of multiple intake and discharge lines. It shall be constructed of corrosion-resistant material and be capable of operating at a pressure of up to 600 PSI.</p> <p>The master drain shall provide independent ports for low point drainage of the fire pump and auxiliary devices.</p>		
<p><b>Priming System</b></p>		
<p>An electrically-driven Waterous priming pump shall be provided for the water pump. The pump shall be a rotary vane type that is oil-free.</p>		
<p>One (1) priming control, located at the pump operator`s position, shall open the priming valve and start the priming motor. The priming valve shall be electronically interlocked to the`Park Brake` circuit to allow priming of the pump before the pump is placed in gear.</p>		
<p><b>INTAKES</b></p>		
<p><b>Left Intake 2.5 Akron Valve</b></p>		
<p>One (1) 2-1/2` suction inlet with a manually operated 2-1/2` Akron valve shall be provided on the left side pump panel.</p>		
<p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.</p>		
<p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		
<p>The outlet of the valve shall be connected to the suction side of the pump with the valve body located behind the pump panel. The valve shall come equipped with a brass inlet strainer, 2-1/2` 3.125x6 double start (Roxbury) female chrome inlet swivel, and shall be equipped with a chrome plated rockerlug plug with a retainer device.</p>		
<p>The valve control shall be located at the pump operator`s panel and shall visually indicate the position of the valve at all times.</p>		
<p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance, and decreased friction loss.</p>		
<p>A 3/4` bleeder valve assembly will be installed on the left side pump panel.</p>		
<p><b>DISCHARGES AND PRECONNECTS</b></p>		

**Front Jump Line 1.5 Akron Valve**

One (1) 1-1/2” preconnect outlet with a manually operated Akron valve shall be supplied to the extended front bumper. The preconnect shall consist of a 2” heavy duty hose coming from the pump discharge manifold to a 2” FNPT x 1-1/2” MNST mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

An air blow-out valve shall be installed between the chassis air reservoir and the front jump line. The control shall be installed on the pump operator’s panel.

The discharge shall be supplied with a Class 1 automatic 3/4” drain valve assembly. The automatic drain shall have an all-brass body with stainless steel check assembly. The drain shall normally be open and automatically close when the pressure is greater than 6 psi.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

**Front Bumper Discharge Swivel**

There shall be a brass swivel provided for the front bumper discharge located in hose tray center front bumper on lower back wall. All 1 1/2” discharges shall terminate at 1 1/2” Iron Pipe Thread (IPT).

**1.5 Crosslays Akron Valve [Qty: 2]**

Two (2) single crosslay discharges shall be provided at the front area of the body. The crosslay shall include one (1) 2” brass swivel with a 1-1/2” hose connection to permit the use of hose from either side of the apparatus.

The crosslay hose bed shall consist of a 2” heavy-duty hose coming from the pump discharge manifold to the 2” swivel. The hose shall be connected to a manually operated 2” Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p> <p>The valve control shall be located at the pump operator`s panel and shall visually indicate the position of the valve at all times.</p> <p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p> <p>All 1 ½” discharges shall terminate at 1 ½” Iron Pipe Thread (IPT).</p>		
<p><b>Single Crosslay 2.5 Akron Valve</b></p> <p>One (1) single crosslay discharge shall be provided at the front area of the body. The crosslay shall have one (1) 2-1/2” mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.</p> <p>The crosslay hose bed shall consist of a 2-1/2” heavy-duty hose coming from the pump discharge manifold to the 2-1/2” swivel. The hose shall be connected to a manually operated 2-1/2” Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.</p> <p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p> <p>The valve control shall be located at the pump operator`s panel and shall visually indicate the position of the valve at all times.</p> <p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss..</p>		
<p><b>Left Panel 2.5 Discharges Akron Valves (2)</b></p> <p>Two (2) 2-1/2” discharge outlets with a manually operated Akron valve shall be provided at the left hand side pump panel.</p> <p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.</p> <p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.</p> <p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p> <p>Each 2 ½” discharge shall include a dealer supplied Chrome Plated brass 30 degree elbow with 3.125x6 double start (Roxbury) threads, including a 2 ½” 3.125x6 female to 1 ½” IPT male reducer equipped with a 1 ½” IPT chrome plated brass cap.</p>		
<p><b>Right Panel 2.5 Discharge Akron Valve</b></p> <p>One (1) 2-1/2” discharge outlet with a manually operated Akron valve shall be provided at the right side pump panel rearward.</p> <p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.</p> <p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p> <p>The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.</p> <p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p> <p>Each 2 ½” discharge shall include a dealer supplied Chrome Plated brass 30 degree elbow with 3.125x6 double start (Roxbury) threads, including a 2 ½” 3.125x6 female to 1 ½” IPT male reducer equipped with a 1 ½” IPT chrome plated brass cap.</p>		
<p><b>Left Rear 2.5" Discharges Akron Valve</b></p> <p>Two (2) 2-1/2” discharge outlet with a manually operated Akron valve shall be supplied to the left rear of the apparatus by a 2-1/2” stainless steel pipe.</p> <p>The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		
<p>The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.</p>		
<p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p>		
<p>Each 2 ½” discharge shall include a dealer supplied Chrome Plated brass 30 degree elbow with 3.125x6 double start (Roxbury) threads, including a 2 ½” 3.125x6 female to 1 ½” IPT male reducer equipped with a 1 ½” IPT chrome plated brass cap.</p>		
<p><b>Deck Gun</b></p>		
<p>An Elkhart Stinger 2.0 break apart monitor with stream shaper and quad stacked tips and 4” LDH portable base shall be included.</p>		
<p><b>Deck Gun Discharge 3” Electric Akron</b></p>		
<p>One (1) 3" deck gun discharge outlet with an electrically operated Akron valve and 3" stainless steel pipe shall be provided above pump compartment.</p>		
<p>Piping shall be rigidly braced as necessary and installed securely so no movement develops when the line is charged.</p>		
<p>The valve shall be an Akron 8600HD series with 316 stainless ball and polymer seals for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the chrome-plated brass ball when in a throttle position with water flowing through it. The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.</p>		
<p>The valve shall utilize an electric driven worm gear actuator with a Navigator 9323 controller. The 9323 controller shall be located at the pump operator`s panel and contain indicator lights for open, closed and throttled valve positions. The valve may also be operated manually in case of electrical system failure.</p>		
<p>The discharge shall be supplied with a 3/4” bleeder valve assembly. The bleeder valve shall be installed to drain water from the gauge pressure line to prevent freezing of the line. The drain shall be controlled with a quarter-turn valve on the pump panel.</p>		
<p>The valve controls and indicators shall be located at the pump operator`s panel.</p>		
<p>All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.</p>		

**Right Panel Discharge 3” Electric Akron**

One (1) 3” discharge outlet with an electrically-operated Akron valve shall be provided at the right side pump panel, forward.

The discharge shall be equipped with a device that shall not allow the valve to open or close in less than three (3) seconds.

The valve shall be an Akron 8600HD series with 316 stainless ball and polymer seals for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the chrome-plated brass ball when in a throttle position with water flowing through it. The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve shall utilize an electric driven worm gear actuator with a Navigator 9323 controller. The 9323 controller shall be located at the pump operator`s panel and contain indicator lights for open, closed and throttled valve positions. The valve may also be operated manually in case of electrical system failure.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss. This discharge shall terminate with a 4” Stortz LDH connection with cap and retainer.

**DISCHARGE OPTIONS**

**IC Push/Pull Control**

The apparatus pump panel shall be equipped with Innovative Controls Side Mount Valve Controls. The ergonomically designed ¼ turn push-pull T-handle shall be chrome-plated zinc with recessed labels for color-coding and verbiage. An anodized aluminum control rod and housing shall, together with a stainless spring steel locking mechanism, eliminate valve drift. Teflon impregnated bronze bushings in both ends of the rod housing shall minimize rod deflection, never need lubrication, and ensure consistent long-term operation. The control assembly shall include a decorative chrome-plated zinc panel-mounting bezel with areas for color-coding and/or FOAM and CAFS identification labels.

**Bleeder Drain Valve [Qty: 11]**

Each discharge shall be bleeder/drain equipped. The bleeder/drain valves shall be Innovative Controls ¾” ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag identifying each valve, also supplied by Innovative Controls. The color labels shall also include valve open and close verbiage.

**Discharge/Intake Bezel**

Innovative Controls intake and/or discharge swing handle bezels shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and/or discharge ports with color and verbiage. These bezel are designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

## **PRESSURE GOVERNORS**

### **FRC PumpBoss Pressure Governor**

Fire Research PumpBoss model PBA400 pressure governor and monitoring display kit shall be installed. The standard kit shall include a control module, pump discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6-3/4" high by 4-5/8" wide by 1-3/4" deep. Inputs for engine information shall be from a J1939 databus or from independent sensors and pump discharge pressure input shall be from a pressure sensor.

The following continuous displays shall be provided:

- \* CHECK ENGINE and STOP ENGINE warning LEDs.
- \* Engine RPM; shown with four daylight bright LED digits more than 1/2" high.
- \* Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments.
- \* Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments.
- \* BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments.
- \* PSI / RPM setting; shown on a dot matrix message display.
- \* PSI and RPM mode LEDs.
- \* THROTTLE READY LED.

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

The program shall store the accumulated operating hours for the pump and engine, previous incident hours, and current incident hours in a non-volatile memory. Stored elapsed hours shall be displayed at the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- \* Low Oil Pressure
- \* High Engine Coolant Temperature
- \* High Transmission Temperature
- \* Low Battery Voltage (Engine Off)
- \* Low Battery Voltage (Engine Running)

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>* High Battery Voltage * High Engine RPM</p> <p>The governor shall operate in two control modes; pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.</p> <p>A throttle ready LED shall light when the pump engaged interlock signal is recognized. The governor shall be in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 PSI. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.</p> <p>The pressure governor and monitoring display shall be programmed to interface with a specific engine.</p> <p>The display module shall be mounted at the pump operator's panel.</p> <p><b>GAUGES</b></p> <p><b>GAUGE IC 10 LED TANK LEVEL WATER/PSTANK</b></p> <p>One (1) Innovative Controls brand water tank level gauge shall be located at the pump operator's panel to provide a high-visibility display of the water tank level. Ten (10) high-intensity light emitting diodes (LEDs) on the display module shall have a 3-dimensional lens allowing the full, 3/4, 1/2, 1/4, and refill levels to be easily distinguished at a glance within full 180 degree visibility.</p> <p>The display module shall be protected from vibration and contamination with the components being encased in an encapsulated plastic housing. The long life and extreme durability of LED indicators eliminates light bulb replacement and maintenance. Color coded cover plates shall complete the assembly of the display module to the pump panel. System calibration shall be accomplished via supplied magnet. Each display level can be set independently for maximum reliability.</p> <p>The display shall provide a steady indication of fluid level despite sloshing inside of the tank when the vehicle is in motion due to an "anti-slosh" feature.</p> <p>In addition to the pump panel mounted lights there shall be one (1) Whelen PSTank series LED (Light Emitting Diode) strip light installed each side towards rear of cab.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The system shall be controlled by an Innovative Control tank level driver module that is integral of the NFPA required pump panel mounted tank level light assembly.</p>		
<p>The additional tank level system shall be interlocked through the parking brake assembly so as not to be on while the vehicle is in motion.</p>		
<p>The remote strip light shall be arranged as follows:</p>		
<p>Full Green  3/4 Blue  1/2 Amber  1/4 Red .</p>		
<p><b>6” Master Pressure Gauges w/Bezel</b></p>		
<p>The master intake and master discharge gauges shall be 6” (101mm) diameter IC pressure gauges. Each gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40F to +160F. Each gauge shall meet ANSI B40.1 Grade 1A requirements with an accuracy of +/- 1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.</p>		
<p>The two master gauges shall be installed into decorative chrome-plated zinc mounting bezel that also incorporates a test port manifold and a graphic overlay that identifies the master intake and discharge gauges, the vacuum test port, and the pressure test port. The test port manifold is solid cast brass with chrome plated plugs. The master gauges shall be installed on the pump panel no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge and display a range from 30” vac to 400 psi with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge and display a range from 0 to 400 psi with black graphics on a white background.</p>		
<p><b>Discharge Gauges 2.5 [Qty: 11]</b></p>		
<p>Each valve discharge gauge shall be 2 ½“(63mm) diameter Innovative Controls pressure gauges. Each gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40F to +160F. Each gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.</p>		
<p>A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative chrome-plated mounting</p>		

bezels that incorporate valve-identifying verbiage and/or color labels. The gauges shall display a range from 0 to 400 psi with black graphics on a white background.

## ELECTRICAL SYSTEMS

### Multiplex Electrical System

#### Electrical System

The apparatus shall incorporate a Weldon V-MUX multiplex 12 volt electrical system. The system shall have the capability of delivering multiple signals via a CAN bus. The electrical system installed by the apparatus manufacturer shall conform to current SAE standards, the latest FMVSS standards, and the requirements of the applicable NFPA 1901 standards.

The electrical system shall be pre-wired for optional computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics.

The electrical circuits shall be provided with low voltage over-current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather-resistant enclosures. The over-current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

Any electrical junction or terminal boxes shall be weather-resistant and located away from water spray conditions.

#### Multiplex System

For superior system integrity, the networked multiplex system shall meet the following minimum component requirements:

- The network system must be Peer to Peer technology based on RS485 protocol. No one module shall hold the programming for other modules. One or two modules on a network referred to as Peer to Peer, while the rest of the network consists of a one master and several slaves is not considered Peer to Peer for this application.
- Modules shall be IP67 rated to handle the extreme operating environment found in the fire service industry.
- All modules shall be solid state circuitry utilizing MOS-FET technology and utilize Deutsch series input/output connectors.
- Each module that controls a device shall hold its own configuration program.
- Each module should be able to function as a standalone module. No “add-on” module will be acceptable to achieve this form of operation.
- Load shedding power management (8 levels).
- Switch input capability for chassis functions.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<ul style="list-style-type: none"> <li>• Responsible for lighting device activation.</li> <li>• Self-contained diagnostic indicators.</li> <li>• Wire harness needed to interface electrical devices with multiplex modules.</li> <li>• The grounds from each device should return to main ground trunk in each sub harness by the use of ultrasonic splices.</li> </ul> <p><b>Wiring</b></p> <p>All harnessing, wiring and connectors shall be manufactured to the following standards/guidelines. No exceptions.</p> <ul style="list-style-type: none"> <li>• NFPA 1901-Standard for Automotive Fire Apparatus</li> <li>• SAE J1127 and J1127</li> <li>• IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies. (Class 3 – High Performance Electronic Products)</li> </ul> <p>All wiring shall be copper or copper alloys of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Insulated wire and cable 8 gauge and smaller shall be SXL, GXL, or TXL per SAE J1128. Conductors 6 gauge and larger shall be SXL or SGT per SAE J1127.</p> <p>All wiring shall be colored coded and imprinted with the circuits function. Minimum height of imprinted characters shall not be less than .082” plus or minus .01”. The imprinted characters shall repeat at a distance not greater than 3”.</p> <p>A coil of wire shall be provided behind electrical appliances to allow them to be pulled away from mounting area for inspection and service work.</p> <p><b>Wiring Protection</b></p> <p>The overall covering of the conductors shall be loom or braid.</p> <p>Braid style wiring covers shall be constructed using a woven PVC-coated nylon multifilament braiding yarn. The yarn shall have a diameter of no less than .04” and a tensile strength of 22 lbs. The yarn shall have a service temperature rating of -65 F to 194 F. The braid shall consist of 24 strands of yarn with 21 black and 3 yellow. The yellow shall be oriented the same and be next to each other.</p> <p>Wiring loom shall be flame retardant black nylon. The loom shall have a service temperature of -40 F to 300 F and be secured to the wire bundle with adhesive-backed vinyl tape.</p> <p><b>Wiring Connectors</b></p> <p>All connectors shall be Deutsch series unless a different series of connector is needed to mate to a supplier’s component. The connectors and terminals shall be assembled per the connector/terminal manufacturer’s specification. Crimble/Solderless terminals shall be acceptable. Heat shrink style shall be utilized unless used within the confines of the cab.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>NFPA Required Testing of Electrical System</b></p> <p>The apparatus shall be electrical tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of NFPA 1901. The following minimum testing shall be completed by the apparatus manufacturer:</p> <p><b>1. Reserve capacity test:</b></p> <p>The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test fail.</p> <p><b>2. Alternator performance test at idle:</b></p> <p>The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.</p> <p><b>3. Alternator performance test at full load:</b></p> <p>The total continuous electrical load shall be activated with the engine running up to the engine 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 this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in NFPA 1901 Standard, or a system voltage of less than 11.7 volts DC for a 12 volt nominal system, for more than 120 seconds, shall be considered a test failure.</p> <p><b>4. Low voltage alarm test:</b></p> <p>Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts DC for a 12 volt nominal system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.</p> <p><b>NFPA Required Documentation</b></p> <p>The following documentation shall be provided on delivery of the apparatus:</p> <p>A. Documentation of the electrical system performance tests required above.</p>		

B. A written load analysis, including:

- a. The nameplate rating of the alternator.
- b. The alternator rating under the conditions.
- c. Each specified component load.
- d. Individual intermittent loads.

**Vehicle Data Recorder**

A vehicle data recorder system shall be provided to comply with the 2009 and 2016 editions of NFPA 1901. The following data shall be monitored:

- Vehicle speed MPH
- Acceleration (from speedometer) MPH/Sec.
- Deceleration (from speedometer) MPH/Sec.
- Engine speed RPM
- Engine throttle position % of full throttle
- ABS Event On/Off
- Seat occupied status Occupied Yes/No by position
- Seat belt status Buckled Yes/No by position
- Master Optical Warning Device Switch On/Off
- Time: 24 hour time
- Date: Year/Month/Day

**Occupant Detection System**

There shall be a visual and audible warning system installed in the cab that indicates the occupant buckle status of all cab seating positions that are designed to be occupied during vehicle movement.

The audible warning shall activate when the vehicle’s park brake is released and a seat position is not in a valid state. A valid state is defined as a seat that is unoccupied and the seat belt is unbuckled, or one that has the seat belt buckled after the seat has been occupied.

The visual warning shall consist of a graphical representation of each cab seat in the multiplex display screen that will continuously indicate the validity of each seat position.

The system shall include a seat sensor and safety belt latch switch for each cab seating position, audible alarm and braided wiring harness.

**Multiplex Displays**

The V-MUX multiplex electrical system shall include two (2) Vista IV color display. One display shall be on the driver side engine cover and one on the officer side engine cover.

The display shall have the following features:

- Aspect ratio of 16:9 (Wide Screen)
- Diagonal measurement of no less than 7”
- Master warning switch
- Engine high idle switch
- Five (5) tactile switches to access secondary menus
- Eight (8) multi-function programmable tactile switches
- Specific door ajar indication
- Real time clock
- Provides access to the multiplex system diagnostics
- Video capability for optional back-up camera(s) and GPS display.

## LIGHT BARS

### Light Bar

A Whelen Freedom IV Series 72” LED light bar model F4X7 with ten (10) LED modules shall be provided; two (2) front corner mounted LED modules, ten (6) forward facing LED modules and two (2) side facing LED modules.

The light bars shall have clear lenses with red and white LED modules.

The white LEDs shall be switched off in blocking right of way mode.

The light bar shall be installed centered on the front cab roof.

## WARNING LIGHT PACKAGES

### Lower Level Warning Light Package

Eight (8) Whelen Super 600 LED light heads and two (2) Whelen Super 500 LED light heads shall be provided.

The rectangular lights shall include chrome flanges where applicable. The lights shall be wired with weatherproof connectors and shall be mounted as close to the corner points of the apparatus as is practical as follows:

- Two (2) Whelen 600 Super LED Red lights on the front of the apparatus facing forward
- Two (2) Whelen 600 Super LED Red lights on the rear of the apparatus facing rearward
- Two (2) lights each side of the apparatus, one (1) Whelen 600 Super LED Red each side at the forward most point (as practical), and one (1) Whelen 500 Super LED TIR6 Red with model 5TSMAC chrome flange each side at the rearward most point (as practical).
- One (1) Whelen 600 Super LED Red light each side of the apparatus centrally located to provide mid ship warning light.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The side facing lights shall be located at forward most position, centered in rear wheel well, and side facing at rear of body in rubrail if equipped.</p>		
<p>All warning devices shall be surface mounted in compliance with NFPA standards.</p>		
<p><b>WARNING LIGHTS</b></p>		
<p><b>Upper Rear Warning Lights</b></p>		
<p>Two (2) Whelen model L31H Super LED beacons with Red domes shall be supplied.</p>		
<p>The lights shall be located rear upper body on aerial style brackets to meet Zone C upper requirements.</p>		
<p><b>Preemption Emitter</b></p>		
<p>A Tomar strobe preemption emitter with chrome plated housing shall be installed. The emitter shall be controlled by a switch in cab accessible to driver and be wired to turn off when the park brake is applied.</p>		
<p>The emitter shall be located officer's side brow.</p>		
<p><b>Hazard (Door Ajar) Light</b></p>		
<p>There shall be a 2.5" red incandescent hazard light installed and located center overhead.</p>		
<p><b>SIRENS</b></p>		
<p><b>Electronic Siren</b></p>		
<p>A Federal PA300 siren model 690010 solid state electronic siren with attached noise-canceling microphone shall be installed. The unit shall be capable of driving a single high power speaker up to 200 watts to achieve a sound output level that meets Class "A" requirements.</p>		
<p>Operating modes shall include Hi-Lo, yelp, wail, P.A., air horn and radio re-broadcast.</p>		
<p>The siren shall be recessed mounted in the cab.</p>		
<p><b>Electronic Siren Control Location</b></p>		
<p>The electronic siren control shall be located in the center overhead console offset to officer side.</p>		
<p><b>Mechanical Siren</b></p>		

A chrome plated flush mounted Federal Q2B-NN coaster siren shall be installed in the front bumper. An electric siren brake switch shall be located in the cab accessible to driver. A second electric siren brake switch shall be located on the officer's side of the cab.

The siren shall be located driver side front bumper in the bumper recess.

## **SPEAKERS**

### **Siren Speaker**

One (1) Federal Signal model ES100 Dynamax 100 watt speaker shall be flush mounted as far forward and as low as possible on the front of the vehicle. A polished model MSFMT with grille shall be provided on the outside of the speaker to prevent road debris from entering the speaker.

Speaker dimensions shall be: 5.5 in. high x 5.9 in. wide x 2.5 in. deep. Weight = 5.5 lbs.

The speaker shall produce a minimum sound output of 120 dB at 10 feet to meet current NFPA 1901 requirements.

The speaker shall be located officer side front bumper.

## **DOT LIGHTING**

### **Tail Lights**

Two (2) Whelen model 600 series LED (Light Emitting Diode) lights with one (1) Whelen 600 series halogen light shall be installed in a Cast 3 housing in a vertical position each side at rear and wired with weatherproof connectors.

Light functions shall be as follows:

- LED red running light with red brake light in upper position.
- LED amber turn signal in middle position.
- Halogen 27 watt clear back-up light in lower position.

A one-piece polished aluminum trim casting shall be mounted around the three (3) individual lights in a vertical position.

### **License Plate Light**

One (1) white LED license plate light mounted in a chrome plated plastic license plate housing shall be mounted at the rear of the body.

### **LED Marker Lights**

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>LED clearance/marker lights shall be installed as specified.</p> <p><b>Upper Cab:</b></p> <ul style="list-style-type: none"> <li>• Five (5) amber LED clearance lights on the cab roof.</li> </ul> <p><b>Lower Cab:</b></p> <ul style="list-style-type: none"> <li>• One (1) amber LED side turn/marker each side of cab ahead of the front door hinge.</li> </ul> <p><b>Upper Body:</b></p> <ul style="list-style-type: none"> <li>• One (1) red LED clearance light each side, rear of body to the side.</li> </ul> <p><b>Lower Body:</b></p> <ul style="list-style-type: none"> <li>• Three (3) red LED clearance lights centered at rear, recessed in the rubrail.</li> <li>• One (1) red LED clearance light each side at the trailing edge of the apparatus body, recessed in the rubrail.</li> <li>• One (1) amber LED clearance/auxiliary turn light each side front of body/module, recessed in the rubrail.</li> </ul>		
<h2><b>LIGHTS - COMPARTMENT, STEP &amp; GROUND</b></h2>		
<h3><b>Compartment Light Package</b></h3>		
<p>One (1) LED compartment light strip shall be mounted in each body compartment greater than 4 cu. ft. Transverse compartments shall have two (2) lights, located one each side.</p>		
<p>Compartment lights shall be wired to a master on/off rocker switch on the cab switch panel.</p>		
<p>The wiring connection for the compartment lights shall be made with a weather resistant plug-in style connector. A single water and corrosion-resistant switch with a polycarbonate actuator and sealed contacts shall control each compartment light. The switch shall allow the light to illuminate when the compartment door is open.</p>		
<h3><b>Medical Cabinet Light</b></h3>		
<p>One (1) LED compartment light strip shall be mounted in the medical cabinet.</p>		
<p>The light shall be wired to the compartment light rocker switch in the cab.</p>		
<h3><b>Additional Compartment Light</b></h3>		
<p>One (1) LED compartment light strip shall be mounted in the left front compartment for a total of (2) strip lights.</p>		
<h3><b>Ground Lights</b></h3>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>The apparatus shall be equipped with a sufficient quantity of lights to properly illuminate the ground areas around the apparatus in accordance with current NFPA requirements. The lights shall be LED (Light Emitting Diode) with clear lenses. The wiring connections shall be made with a weather resistant plug in style connector.</p>		
<p>One (1) ground light shall be supplied under each side of the front bumper extension (if equipped).</p>		
<p>One (1) light shall be supplied to illuminate the ground below each cab door. Lights in areas under the driver and crew area exits shall be activated automatically when the exit doors are opened.</p>		
<p>One (1) ground light shall be supplied under each side of the pump panel area (if equipped).</p>		
<p>One (1) ground light shall be installed below each side body staircase (if equipped).</p>		
<p>Three (3) ground lights shall be supplied under the rear of the apparatus.</p>		
<p>Ground area lights shall be switched from the cab dash with the work light switch.</p>		
<p><b>Additional Ground Lights/Directional Controlled</b></p>		
<p>Four (4) additional LED lights shall be provided to illuminate the ground, one ahead and one behind the wheel well on each side. These lights shall be activated with the directional lights to provide additional turn lighting.</p>		
<p><b>LIGHTS - DECK AND SCENE</b></p>		
<p><b>Hose Bed Light [Qty: 2]</b></p>		
<p>Two (2) flush-mounted Whelen Model 40BUH (or equivalent) scene light with a clear lens shall be installed at the front wall of the hose bed to provide hose bed lighting per current NFPA 1901. All electrical connectors are to be enclosed in the housing providing protection against the elements.</p>		
<p>The hose bed lights shall be switched with work light switch in the cab.</p>		
<p><b>Crosslay Light</b></p>		
<p>A Truck-Lite round LED light model 81380 shall be installed at the rear area of the crosslay to provide crosslay lighting per current NFPA 1901. The crosslay light shall be switched with the work light switch in the cab.</p>		
<p><b>Scene Lights</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Two (2) Whelen model 6SC0ENZR surface mounted 600 series Super LED clear scene lights shall be provided.</p> <p>Each shall have 12 Super LED diodes with internal light deflecting optics. The internal light deflecting optics shall redirect the light from 8 - 32 degrees.</p> <p>Lights shall be located (1) each side rear compartment face up high and switched in cab.</p>		
<p><b>Deck/Scene Light Wired to Back-Up Lights</b></p> <p>The rear deck or scene lights shall be activated when the chassis is placed in reverse to provide additional lighting, in addition to the back-up lights, when backing the vehicle.</p>		
<p><b>LIGHTS - NON-WARNING</b></p>		
<p><b>Engine Compartment Light</b></p> <p>There shall be lighting provided in compliance with NFPA to illuminate the engine compartment area.</p>		
<p><b>Pump Compartment Light</b></p> <p>An incandescent light shall be provided in the pump compartment area for NFPA compliance. The light shall be wired to operate with the work light switch in the cab.</p>		
<p><b>Map Light</b></p> <p>A Federal "Little Light" map light shall be supplied. The map light shall be 12 volt with 18" flexible gooseneck with an on/off switch and matte black finish. It shall be located at officer's A post.</p>		
<p><b>Pump Panel Light Package</b></p> <p>Six (6) LED pump panel lights shall be provided. The lights shall be located three (3) each side under a light shield directly above the left and right side pump panels. The lights shall be Tecniq with polished stainless steel housings. The light shields shall be formed from 14 gauge brushed finish stainless steel. The work light switch in the cab shall activate the lights when the park brake is set.</p>		
<p><b>CONTROLS / SWITCHES</b></p>		
<p><b>Foot Switch</b></p> <p>A heavy duty metal floor mounted foot switch shall be installed to operate the Q2B siren. It shall be located officer's side kick panel 2" above floor.</p>		

## CAMERAS / INTERCOM

### Camera Back-Up

There shall be a Voyager camera model number VCCS150B provided mounted on the rear of the apparatus. The camera shall feature a wide angle lens, IR LED assisted illumination for enhanced low-light performance, non-corrosive mounting bracket, and stainless steel hardware. The camera shall be interlocked with the chassis transmission. When the apparatus is placed in reverse the camera shall automatically be activated and when the transmission is placed in any other gear the screen shall return to the previously displayed screen.

The camera shall have the following specifications:

- NTSC/PAL Video output signal format
- 150° Viewing angle
- Housing: Aluminum
- Waterproof: IPX7
- Built-in microphone
- Dimensions: 2.7" W x 1.7" H x 2.5" D

The camera shall be located at the rear of the truck, up as high as possible. Optimize mounting position using space not allocated by other equipment/options unless otherwise specified.

### Cameras, Officer and Driver Side

There shall be a Voyager camera model number VCMS36RCM provided mounted at the officer and the driver side front cab corner. The camera shall feature high performance color optics, a wide angle lens and IR LED assisted illumination for enhanced low-light performance. The camera shall be interlocked with the right turn signal. When the apparatus' turn signal is activated, the respective side camera shall automatically be activated and when the turn signal is canceled shall return to the previously displayed screen.

The camera shall have the following specifications:

- Waterproof (IPX7 rated)
- NTSC Video Output Signal Format
- Sensitivity: 0 Lux
- 102° Horizontal viewing angle
- Dimensions: 1.68" W x 2.19" H x 3.31"D

### Back-Up Camera Speaker

One (1) Standard Horizon model MLS 310 speaker shall be provided in the cab accessible to the driver. Speaker shall feature an on/off switch and volume control, and automatically activated when apparatus transmission is placed in reverse.

## MISC ELECTRICAL

### Alternating Headlights

The chassis high beam headlights shall alternately flash and shall be controlled by a rocker switch mounted inside the cab.

### Back-Up Alarm

An electronic back-up alarm shall be supplied. The 97 dB alarm shall be wired into the chassis back-up lights to signal when the vehicle is in reverse gear.

### 12 Volt DC Power Distribution Module

There shall be two (2) 12 place 12 volt DC power distribution module installed, one behind the officer seat and one in compartment R3.

The module will have six (6) circuits wired directly to the battery and have six (6) circuits wired through the master battery switch with 12 positions for grounds. Connection to the power module circuit will be through a .250 female spade connector. Each buss will be protected with a 50 amp circuit breaker for overload protection. The module will accept ATC blade type fuses or 22X series circuit breakers.

## GENERATOR

### Hydraulic Generator

A Smart Power model HR-8 top mount style 8000 watt hydraulic generator shall be provided. Generator location: dunnage pan offset to driver side.

The unit shall come equipped with: modular generator unit (which includes the hydraulic motor and filter, generator, and cooler), axial piston hydraulic pump, hydraulic reservoir, and a gauge panel.

The gauge panel shall display voltage, hour meter, frequency, and amperage.

The hydraulic motor, generator, blower, cooler, and necessary hydraulic components shall be mounted in a rugged steel case.

The modular generator unit shall be 32" long x 13.5" wide x 17" high and weigh approximately 220 pounds.

The hydraulic pump shall be driven by a chassis transmission mounted power take off (PTO).

A generator control / PTO engage switch shall be mounted on the cab instrument panel to engage the PTO and start the generator.

**Ratings and Capacity**

Rating: 8000 watts continuous  
 9000 watts peak  
 Volts: 120/240 volts  
 Phase: Single, 4 wire  
 Frequency: 60 Hz  
 Amperage: 66 amps @ 120 volts or 33 amps @ 240 volts  
 Engine speed at engagement: Recommend below 1000 RPM  
 Operation range: 800 to 2100 RPM

**Testing**

The generator shall be tested in accordance with current NFPA 1901 standards.

Notes:

- \*All ratings and capacities shall be derived utilizing current NFPA 1901 test parameters.
- \*Extreme ambient temperatures could affect generator performance.

**GENERATOR TEST**

**3rd Party Generator Testing**

The generator shall be tested at the manufacturer’s facility by an independent, third-party testing service. The conditions and testing of the generator shall be as outlined in current NFPA 1901.

The test shall include operating the generator for two hours at 100% of the rated load. Power source voltage, amps, frequency shall be monitored. The prime movers oil pressure, water temperature, transmission temperature (if applicable) and power source hydraulic fluid temperature (if applicable) shall be monitored during testing.

The results of the test shall be recorded and provided with delivery documentation.

**BREAKER BOXES**

**Circuit Breaker Panel**

A twelve (12) place breaker box with up to twelve (12ft) appropriately sized ground-fault interrupter circuit breakers shall be installed in the L1 lower right side wall, within 3” of the door. The breaker box will include a master breaker sized according to the generator output. The breaker box will be located in the specified compartment, not to exceed 12’ run of wire.

Note: If generator is 5.5KW or less, the main breaker will occupy 2 places, leaving 10 available.

Dimensions: 17.92” high x 14.25” wide x 3.75” deep.

## LIGHTS – SCENE

### Whelen Pioneer 12V LED Flood Light

A Whelen Pioneer Plus series 12V flood light model PFP2 dual panel LED light head shall be provided on a center position cab brow mount. The rectangular extruded light fixture with die cast end caps shall measure 14" wide by 4-5/8" high by 3" deep and have a white powder coat finish. The light fixture shall have dual panel (4) clusters of LED lamps with molded vacuum metalized reflector that draws 12 amps and produce 14,000 usable lumens.

### Pioneer 12 Volt Flood Lights (2)

Two (2) Whelen Pioneer Plus, PFP2 12V LED light fixture(s) on a Whelen 3000 series pole shall be installed and located either side at the back of the cab. The rectangular extruded light fixture with die cast end caps shall measure 14" wide by 4-5/8" high by 3" deep and have a white powder coat finish. The light fixture shall have a dual panel (4) clusters of LED lamps with molded vacuum metalized reflector that draws 13 amps at 12.8 VDC. The lights shall be provided with a locking swivel joint to allow the lights to be manually tilted up/down and locked in position by the operator. Handle standard.

The light assembly shall be externally mounted as specified. The pole shall allow for 360-degree rotation of the light. A locking knob shall hold the pole at the desired height.

### Flood Light Switches

The 12 volt telescopic lights located at the rear of the cab shall be switched from the driver side of the cab in addition to at the light heads themselves.

### Scene Lights

Two (2) side facing Whelen Model 900 LED flood lights shall be installed in above the intermediate window in the raised cab, one each side. These shall be operated on VMUX controller with Left and Right side scene lighting.

## LIGHT TOWERS

### Light Tower

A Command Light model KL475A-FO light tower with back lighting capability shall be provided. The light tower shall be a two-stage articulating device with a lighting bank on top of

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>a second stage capable of 360 degrees continuous rotation. The light shall be elevated by electric linear actuators, one (1) actuator shall elevate the light bank, and one (1) actuator shall adjust the light bank angle from 0 to 110 degrees.</p> <p>The light bank shall have six (6) weatherproof 750 watt output, quartz halogen lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. Power for light bank shall be transmitted through power collecting rings thus allowing 360+ degrees rotation in either direction, NO EXCEPTIONS.</p> <p>Light tower shall be controlled with a hand-held umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The controls on the remote box shall be:</p> <ol style="list-style-type: none"> <li>1. Three (3) switches, one (1) for each light bank.</li> <li>2. One (1) light bank rotation switch.</li> <li>3. One (1) switch for elevating lower stage.</li> <li>4. One (1) switch for elevating upper stage.</li> <li>5. One (1) indicator light to indicate when light bank is out of roof nest position.</li> <li>6. One (1) indicator light to indicate when light bank is rotated to proper nest position.</li> <li>7. One (1) back light activation switch.</li> </ol> <p>The controls shall be located next to the breaker box.</p> <p>The tower base shall have a light that illuminates the envelope of motion during any movements of the light tower mast.</p> <p>A red strobe light shall be supplied with the light tower mounted at the highest position. A switch shall be provided on hand held control head for strobe light.</p> <p>The Command Light assembly shall be all aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.</p> <p>The light tower shall be located forward of the vista on the cab roof.</p> <p><b>ELECTRIC CORD REELS</b></p> <p><b>Electric Cord Reel</b></p> <p>Hannay electric cord reel(s) (ECR 1616-17-18) shall be installed and located in pump module storage pan officer side. The reel shall be able to be rewound manually in the event of failure of the electric motor.</p> <p>The reel(s) shall include 200` of black 10 gauge 3 conductor type SOWA cord. The cord shall be rated at 20 amps @ 110 volts. The end of the cord shall be terminated for the installation of a NEMA L5-15 twist lock connector.</p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Rollers, Cord Reel</b></p> <p>Rollers, stainless steel cord reel rollers shall be installed and located through officer side upper pump panel.</p> <p>The rollers shall be located officer side pump module in line with reel.</p> <p>The rollers shall facilitate smooth removal of the electric cord.</p>		
<p><b>Cord Reel Rewind Switch</b></p> <p>A heavy duty rubber covered electric reel rewind button shall be installed officer side pump panel.</p>		
<p><b>MISC LOOSE EQUIPMENT</b></p>		
<p><b>DOT Required Drive Away Kit</b></p> <p>Three (3) triangular warning reflectors with carrying case shall be supplied to satisfy the DOT requirement.</p>		
<p><b>GROUND LADDERS</b></p>		
<p><b>Little Giant</b></p> <p>A Little Giant model 17 shall be supplied and shipped loose.</p>		
<p><b>Duo Safety Folding Ladder</b></p> <p>A Duo Safety Model 585-A 10' folding ladder shall be provided. The ladder shall meet or exceed the requirements of the current edition of NFPA 1931.</p>		
<p><b>Duo-Safety 2 Section Extension Ladder</b></p> <p>A Duo-Safety Series 900-A 24' two section extension ladder shall be provided.</p>		
<p><b>Duo-Safety Roof Ladder</b></p> <p>A Duo-Safety 775-A 14' roof ladder shall be provided.</p>		
<p><b>EXTERIOR PAINT</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Undercoating</b></p> <p>Undercoating shall consist of a heavy coating of CRC SP400 soft seal film sprayed on the undercarriage of the entire vehicle to repel water and road elements.</p> <p><b>Paint Custom Cab and Body</b></p> <p>The apparatus cab and body shall be painted Sikkens FLNA3047 Red. The paint process shall meet or exceed current state regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Contractor shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.</p> <p>The aluminum cab exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces. Cab doors and any hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on cab, door jambs and door edges.</p> <p>Paint process shall feature Sikkens high solid LV products and be performed in the following steps:</p> <ul style="list-style-type: none"> <li>• Corrosion Prevention - all aluminum surfaces shall be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.</li> <li>• Sikkens Sealer/Primer LV - acrylic urethane sealer/primer shall be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.</li> <li>• Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat shall be applied, providing excellent coverage and durability. A minimum of two (2) coats shall be applied.</li> <li>• Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat shall be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats shall be applied.</li> </ul> <p>Any location where aluminum is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment shall be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting pre-treatment.</p> <p>After the paint process is complete, the gloss rating of the unit shall be tested with a 20 degree gloss meter. Coating thickness shall be measured with a digital MIL gauge and the orange peel with a digital wave scan device.</p> <p><b>INTERIOR PAINT</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p><b>Cab Interior Paint</b></p> <p>The interior of the cab shall be painted Zolatone gray #20-64. Prior to painting, all exposed interior metal surfaces shall be pretreated using a corrosion prevention system.</p>		
<p><b>LETTERING</b></p>		
<p><b>Sign Gold Letter [Qty: 100]</b></p> <p>3” high Sign Gold letters shall be applied as specified. It is the responsibility of the proposing manufacturer to ensure that the fire department lettering requirements are met.</p>		
<p><b>Sign Gold Letter [Qty: 2]</b></p> <p>Letters shall be 9” high and applied as specified.</p>		
<p><b>Lettering Shade and Outline [Qty: 102]</b></p> <p>Existing letter shall be shaded and outlined in black to contrast the letters.</p>		
<p><b>STRIPING</b></p>		
<p><b>Scotchlite Stripe</b></p> <p>A ”Hockey Stick” Scotchlite reflective stripe, 4” minimum in width, shall be applied horizontally across the front of the cab and shall contour as it transitions from cab to body to comply with NFPA 1901. The color shall be white and with the top of stripe flush with top of bumper, and hockey up on the L1/R1 compartments to the middle of the upper body sides..</p>		
<p><b>Trim Stripes</b></p> <p>A 1” Scotchlite stripe shall be applied above and below the existing stripe. The stripes shall be spaced 1” away from the main stripe.</p>		
<p><b>Rear Body Scotchlite Striping</b></p> <p>Printed chevron style Scotchlite striping shall be provided on the rear of the apparatus. The stripes shall consist of 6” Yellow/Red alternating stripes in an ”A” pattern. The striping shall be located on the rear facing extrusions, panels, doors and inboard/outboard of the beavertails if applicable.</p>		
<p><b>Front Bumper Scotchlite Striping</b></p>		

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Chevron style printed Scotchlite striping shall be provided on the front bumper of the apparatus. The stripes shall consist of 6" Yellow/Red alternating stripes in an "A" pattern.</p>		
<p><b>Designated Standing / Walking Area Indication</b></p> <p>A 1" wide yellow line shall be applied to indicate the outside perimeter of designated standing and walking areas above 48" from the ground in compliance with 2016 NFPA 1901. Steps, ladders and areas with a railing or structure at least 12" high are excluded from requiring the line.</p>		
<p><b>WARRANTY / STANDARD &amp; EXTENDED</b></p> <p><b>Standard 1 Year Warranty</b></p> <p>The apparatus manufacturer shall provide a full 1-year standard warranty. All components manufactured by the apparatus manufacturer shall be covered against defects in materials or workmanship for a 1-year period. All components covered by separate suppliers such as engines, transmissions, tires, and batteries shall maintain the warranty as provided by the component supplier. A copy of the warranty document shall be provided with the proposal.</p> <p><b>Lifetime Frame Warranty</b></p> <p>The apparatus manufacturer shall provide a full lifetime frame warranty. This warranty shall cover all apparatus manufacturer designed frame, frame members, and cross-members against defects in materials or workmanship for the lifetime of the covered apparatus. A copy of the warranty document shall be provided with the proposal. Frame warranties that do not cover cross-members for the life of the vehicle shall not be acceptable.</p> <p><b>10 Year 100,000 Mile Structural Warranty</b></p> <p>The apparatus manufacturer shall provide a comprehensive 10 year/100,000 mile structural warranty. This warranty shall cover all structural components of the cab and/or body manufactured by the apparatus manufacturer against defects in materials or workmanship for 10 years or 100,000 miles, whichever occurs first. Excluded from this warranty are all hardware, mechanical items, electrical items, or paint finishes. A copy of the warranty document shall be provided with the proposal.</p> <p><b>10 Year Stainless Steel Plumbing Warranty</b></p> <p>The apparatus manufacturer shall provide a full 10-year stainless steel plumbing components warranty. This warranty shall cover defects in materials or workmanship of apparatus manufacturer designed foam/water plumbing system stainless steel components for 10 years. A copy of the warranty document shall be provided with the proposal.</p> <p><b>10 Year Paint and Corrosion Warranty</b></p>		

The apparatus manufacturer shall provide a 10-year limited paint and corrosion perforation warranty. This warranty shall cover paint peeling, cracking, blistering, and corrosion provided the vehicle is used in a normal and reasonable manner.

The paint shall be prorated for 10 years as follows:

Topcoat & Appearance:		Coating System, Adhesion & Corrosion:	
Gloss, Color Retention, Cracking		Includes Dissimilar metal corrosion, Flaking, Blistering, Bubbling	
0 to 72 months	100%	0 to 36 months	100%
73 to 120 months	50%	37 to 84 months	50%
		85 to 120 months	25%

Corrosion perforation shall be covered 100% for 10 years. Corrosion perforation is defined as complete penetration through the exterior metal of the apparatus.

The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. A copy of the warranty document shall be provided with the proposal.

UV paint fade shall be covered in a separate warranty supplied by Akzo Nobel (Sikkens) and shall be for a minimum of 10 years.

**25 Year Frame Rail Corrosion Warranty**

The chassis manufacturer shall provide a 25 year corrosion warranty on the chassis frame rails. This warranty shall cover the chassis frame rails, including frame rail liners (if equipped), for a period of 25 years after the date on which the vehicle is delivered to the original purchaser. A copy of the warranty document shall be provided with the proposal. Please refer to warranty document for complete details and exclusions.

**20 Year Frame Components Corrosion Warranty**

The chassis manufacturer shall provide a 20 year corrosion warranty on the galvanized chassis frame components. This warranty shall cover the front frame extensions, chassis crossmembers (from engine rearward), battery tray brackets and rear underbody support (if applicable) for a period of 20 years after the date on which the vehicle is delivered to the original purchaser. A copy of the warranty document shall be provided with the proposal. Please refer to warranty document for complete details and exclusions.

**SUPPORT, DELIVERY, INSPECTIONS AND MANUALS**

**Approval Drawings**

A general arrangement drawing depicting the vehicles appearance shall be provided. The drawing shall consist of left side, right side, front, and rear elevation views.

Specification for: CITY OF BURLINGTON FIRE DEPARTMENT	BIDDER COMPLIES	
	YES	NO
<p>Vehicles requiring pump controls shall include a general arrangement view of the pump operator's position, scaled the same as the elevation views.</p> <p><b>Electronic Manuals</b></p> <p>Two (2) copies of all operator, service, and parts manuals MUST be supplied at the time of delivery in electronic format (CD-ROMs) -NO EXCEPTIONS! The electronic manuals shall include the following information:</p> <ul style="list-style-type: none"> <li>• Operating Instructions, descriptions, specifications, and ratings of the cab, chassis, body, aerial (if applicable), installed components, and auxiliary systems.</li> <li>• Warnings and cautions pertaining to the operation and maintenance of the fire apparatus and fire fighting systems.</li> <li>• Charts, tables, checklists, and illustrations relating to lubrication, cleaning, troubleshooting, diagnostics, and inspections.</li> <li>• Instructions regarding the frequency and procedure for recommended maintenance.</li> <li>• Maintenance instructions for the repair and replacement of installed components.</li> <li>• Parts listing with descriptions and illustrations for identification.</li> <li>• Warranty descriptions and coverage.</li> </ul> <p>The CD-ROM shall incorporate a navigation page with electronic links to the operator's manual, service manual, parts manual, and warranty information, as well as instructions on how to use the manual. Each copy shall include a table of contents with links to the specified documents or illustrations.</p> <p>The CD must be formatted in such a manner as to allow not only the printing of the entire manual, but to also the cutting, pasting, or copying of individual documents to other electronic media, such as electronic mail, memos, and the like.</p> <p>A find feature shall be included to allow for searches by text or by part number.</p> <p>These electronic manuals shall be accessible from any computer operating system capable of supporting portable document format (PDF). Permanent copies of all pertinent data shall be kept file at both the local dealership and at the manufacturer's location.</p> <p>NOTE: Engine overhaul, engine parts, transmission overhaul, and transmission parts manuals are not included.</p> <p><b>Fire Apparatus Safety Guide</b></p> <p>Fire Apparatus Safety Guide published by FAMA, latest edition. This safety manual is intended to point out some of the basic safety situations that may be encountered during the normal operation and maintenance of a fire apparatus and to suggest possible ways of dealing with these situations. This manual is NOT a substitute for the fire apparatus operator and maintenance manuals or commercial chassis manufacturer's operator and maintenance manuals.</p>		

## DEALER ADDED EQUIPMENT

### Dealer

[1] A voucher in amount of \$5000 shall be included. The voucher is for use by the purchaser in obtaining and if necessary installing loose equipment.

[1] Delivery to the Burlington Fire Dept Vehicle Orientation shall be supplied.

[1] A set of On-Spot Automatic Tire Chains shall be installed.

[1] A voucher in the amount of \$13,200 shall be included for the installation of and purchase of radios, a wireless intercom, and associated components.

[1] Travel and Meeting Time will be supplied for two Fire Department Members for Pre Build Factory Conference.

[1] Travel for 2 Members of the Fire Department to Factory for Final Inspection and Acceptance shall be supplied.

[1] A set of Aluminum Cast Wheel Chocks and Mounting Hardware shall be included and installed in Department specified location.

### Radios and headsets

[1] A voucher in the amount of \$13,200 shall be included for the installation of and purchase of radios, a wireless intercom, and associated components

### Electrical

[1] A Portable Electric Junction Box shall be supplied. The box shall be lighted and include 4 outlets in the NEMA configuration requested by the purchaser.