AERIAL CONTROL VALVE

The aerial hydraulic control valve will be designed with special spool flows, limiting the oil flow for the designed function speed. The valve will be manually controlled and be located in the control console with the handles protruding through the operating surface for operation. The activation handles will be spaced a minimum of 3.5" for ease of operation.

OIL RESERVOIR

The oil reservoir will have a minimum capacity of 38 gallons. The oil fill location will be easily accessible and be labeled "Hydraulic Oil Only" and also indicate the grade of oil that is installed in the reservoir. The fill will have a desiccant breather filter with a water capacity of 4 fluid ounces and a 5 micron rating. A drain hose will be included and will terminate with a quarter turn ball valve. Two (2) suction ports will be provided, one (1) for the main hydraulic pump and one (1) for the emergency pump. The main suction will be slightly elevated off the bottom of the reservoir and include a 100 mesh suction strainer. The emergency suction port will be closer to the bottom of the reservoir to provide some reserve oil for emergency operation. A six (6) disc type magnetic drain will also be provided to collect any ferrous contaminants. A float type sending unit in the reservoir will provide an indication of oil level on an electric gauge mounted adjacent to the fill location.

HIGH PRESSURE FILTER

The pressure filter will be rated for 6,000 psi working pressure and generously sized for efficiency and capacity. A 90 psi bypass spring will be included to protect the element and hydraulic system during lower than normal system operating temperatures.

The 5Q filter element will be constructed of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic. The nominal rating will be 5 micron and have an efficiency rating of 99.3 % for 5 micron sized particles. The element will have a dirt holding capacity of not less than 35 grams.

RETURN FILTER

The return filter will be rated for 800 psi working pressure and generously sized for efficiency and capacity. A 25 psi bypass spring will be included to protect the element and hydraulic system during lower than normal system operating temperatures. The 5Q filter element will be constructed of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic. The nominal rating will be 5 microns and have an efficiency rating of 99.6% for 5 micron sized particles. The element will have a dirt holding capacity of not less than 40 grams.

HYDRAULIC SWIVEL

The aerial ladder will be equipped with a three (3) port, high pressure hydraulic swivel which will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point

to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

ELECTRIC SWIVEL

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 32 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

12-BIT ABSOLUTE ENCODER

The aerial ladder will be equipped with a 12-Bit Absolute Encoder which provides 4096 counts per shaft turn for position and direction reference.

The 12-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 12-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 12-Bit Absolute Encoder will be an integral part of a micro-processor based control system.

ELECTRICAL SYSTEM

The aerial electrical system will be designed and manufactured in such a way that the power and signal protection and control compartments will contain circuit protection devices and power control devices. The power and signal protection and control components will be protected against corrosion, excessive heat, excessive vibration, physical damage, and water spray.

The aerial electrical system will be designed and manufactured to allow the following:

- All of the serviceable components will be readily accessible.

- Circuit protection devices will be utilized to protect each circuit.

- All circuit protection devices will be sized to prevent wire and component damage when subjected to extreme current overload.

- General protection circuit breakers will be Type-I automatic reset (continuously resetting) or Type-II (manual resetting) and conform to SAE requirements. When required, automotive type fuses conforming to SAE requirements will be utilized to protect electronic equipment.

- Power control relays and solenoids, when utilized, will have a direct current (dc) rating of 125% of the maximum current for which the circuit is protected.

The aerial electrical system will be designed and manufactured to allow the following:

- Toggle switches will be utilized that are certified for the outside conditions that fire apparatus experience.

- All wiring will be protected through conduit or loom.

- All wiring harnesses will be properly supported to eliminate harness damage through rubbing.

- An inductive proximity switch and illumination light will be incorporated into the boom support.

- The aerial master and aerial PTO can be engaged after the water pump has been engaged without having to bring the RPM back to idle.

- Standard cabling to the tip of the aerial will consist of one (1) 16/20 cable and one (1) 12/8 cable.

DRIVER SIDE TORQUE BOX POWER DISTRIBUTION PANEL

A fuse and relay panel, located behind the driver side stabilizer, will include the following:

- NEMA 4x rated weatherproof enclosure

- Relays, fuses, and circuit breakers for aerial and stabilizer interlocks and control switches

TURNTABLE LIGHTING

The turntable will be lighted for nighttime operation with a minimum of two (2) LED work lights activated by the aerial master switch. A foot switch will be located at the turntable console to allow hydraulic flow to the aerial device. The foot switch will be protected by a cover to prevent accidental activation. Activation of the foot switch is necessary for aerial device operation.

TURNTABLE CONSOLE

The following switches and indicator lights will be standard on the turntable console:

- High idle on/off switch

- Tip/Tracking light switch

- Indicator and alarm test switch

- Emergency hydraulic power switch

- STABILIZERS NOT FULLY EXTENDED amber indicator light

- Rung alignment green indicator light

The turntable console will be lighted for nighttime operation with one (1) work light activated by the aerial master switch. A fuse panel will be located in the turntable console.

TURNTABLE OVERRIDE CONTROLS

The aerial manual override controls will be located in the turntable control console.

MASTER OVERRIDE CONTROLS

An emergency power switch will be located at the rear of the apparatus. The switch will activate the emergency power unit and allow control of the aerial or stabilizers based on the direction the switch is toggled.

A work light will be provided to illuminate the master override controls when the battery switch is active and the master override door is open.

BOOM SUPPORT

A Turck inductive proximity switch will be provided on the boom support to detect if the aerial device is fully stowed within the boom support.

STABILIZER INDICATOR

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed, to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move" indicator light, which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

CRADLE INTERLOCK SYSTEM

A cradle interlock system will be provided to prevent the lifting of the aerial from the nested position until the operator has positioned all the stabilizers in a load supporting configuration. A switch will be installed at the cradle to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

STABILIZER ALARM

An electronic warning device will be provided at each stabilizer to warn personnel that the stabilizers are being deployed. Each alarm will produce a fast pulsing 90 DBA signal and will cancel only when the stabilizer is put into a load bearing configuration.

STABILIZER SCENE LIGHTS

A 4.00" clear floodlight will be provided on each stabilizer to illuminate the surrounding area. The light will be actuated by the aerial master switch.

SPOTLIGHTS

Four (4) Collins, Model FX-12, 750,000 candle power, 12-volt spot/floodlights will be furnished. The two (2) "tracking lights" will be mounted on the base section of the ladder; one (1) each side. The two (2) "tip lights" will be mounted on the tip of the ladder; one (1) on each side. The lights will be mounted below the handrail height so as not to increase the overall height of

the unit. An individual master switch with appropriate identification labels will be provided for the "tracking lights" and "tip lights" in addition to the on/off switch located on the light itself.

LIGHTING ON AERIAL LADDER

There will be TecNiq, Model D02 LED rung lighting provided on both sides of the aerial ladder base, lower and upper mid, and fly sections. The lighting will be located adjacent to the ladder rungs along the lower rail of the ladder sections and will run the length of the ladder section.

The color of the sections will be:

- The base section of the ladder to be blue.
- The lower mid section of the ladder to be blue.
- The upper mid section of the ladder to be blue.
- The fly section of the ladder to be blue.

The LED rung lighting will be activated when a switch at the platform operator's panel is activated through the aerial master and a switch at the turntable operator's panel is activated through the master battery switch.

The lights may be load managed when the parking brake is applied.

STABILIZER WARNING LIGHTS

Four (4) Whelen Model 60*02F*R, flashing Super LED warning light will be mounted on the stabilizer cover panel; one (1) for each panel.

Front stabilizer LEDs will be red Super LED/red lens each side.

Rear stabilizer LEDs will be red Super LED/red lens each side.

These warning lights will be activated by the NFPA side zone switch.

These lights will be provided with a polished trim flange

STABILIZER BEAM WARNING LIGHTS

Two (2) 4.00" diameter red LED flashing lights will be mounted on each stabilizer; one (1) facing forward and one (1) facing rearward. The lights will be Grote Supernova 40 series LED lights. The lights will be recessed in the horizontal beam of the stabilizer. These warning lights will be activated with the aerial master switch.

120-VOLT RECEPTACLE AT TIP

A 120-volt, 15 amp, twist lock receptacle, with weatherproof cover will be provided at the tip of the aerial device.

240 VOLT TIP OF LADDER LIGHTING

There will be two (2) Fire Research Spectra, Model SPA570-J20, 240 volt AC white LED floodlights with pedestal mounting brackets provided at the tip of the ladder. The lights will be located on the driver's and passenger's sides.

Lights will be switched at the lighthead and turntable

3-WAY AERIAL COMMUNICATION SYSTEM

There will be a Fire Research Model ICA900-213 three-way intercom system provided. There will be two (2) control modules located, one (1) at the turntable operator console and one (1) at the pump panel. Each control module will have and an LED volume display and push-button volume control. A hands free module will be located at the aerial tip or platform and constantly transmit to the other module unless the push-to-talk button is pressed.

Each intercom unit will be weatherproof.

LIFTING EYE - ROPE RESCUE ATTACHMENT

Two (2) eyes will be welded; one (1) to each ladder beam at the ladder egress with a spreader bar to mounted between the eyes. This design will distribute a load evenly across the ladder beams because of a single lifting eye on the spreader bar. The bar is retained by two (2) locking pins; one (1) at each end outboard of each eye. Leveling is maintained by the bar rotating in the eyes.

COLLISION AVOIDANCE

The aerial device will be supplied with a collision avoidance control system. The collision avoidance control system will be calibrated so that the aerial device does not make contact with any part of the fire apparatus during normal operation.

The collision avoidance control system will consist of the following sensors:

Single axis sensor to determine aerial device elevation.

Angle sensors to determine turntable angle with reference to aerial device position.

Absolute encoder integral to the swivel to determine aerial device rotation.

The aerial ladder will be equipped with an absolute encoder for position and direction reference.

The absolute encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the absolute encoder will allow power to be returned to the system without having to re-zero the settings.

The absolute encoder will be an integral part of a microprocessor based control system

The collision avoidance control system will be divided up to a maximum of nine (9) control zones. Each zone will have its own independent rotation and elevation parameters.

The collision avoidance control system will be equipped with a warning system that alerts the operator when the aerial device has reached the limits of each control zone. The warning system will sound when either the rotation or elevation movements reach the limits of the control zone.

The warning system alarm and red light will be active whenever the ladder is in a restricted area and will then prevent aerial device movement.

A green indicator light will activate when the aerial is in a position to be safely stowed.

SPECIAL COLOR, BOOM SUPPORT

The boom support will be painted job color.

CONTROL PANEL ILLUMINATION (IN PLACE OF STANDARD)

There will be one (1) Amdor LumaBar H2O, Model XX9927, 12.00" LED strip light provided in place of the standard panel mounted light.

The LED strip light will be mounted as to not interfere with the opening of the control panel door.

AERIAL STABILITY GAUGE

There will be a Class 1 Load Minder located in the turntable control station. The gauge and warning alarm will be clearly identified and conveniently located for ease of viewing.

There will be Preco Model 7414A amber LED lights provided at each side of the tip of the base section of the aerial device.

SPLASH GUARD FOR REAR CONTROLS

A splash guard will be provided at the rear of the apparatus under the body to protect the stabilizer control manifold from road splash and grime. The guard will go from the rear access step to rear access step and will be a maximum width to cover the entire manifold. The splash guard will be an "L" shape to protect the stabilizer control manifold. Tubing will be provided to extend the aerial drain and aerial relief to the side and below the splash guard.

MANSAVER™ BARS, AERIAL TURNTABLE

ManSaver™ bars will be installed at the aerial turntable.

WATER SYSTEM

A waterway system will be provided consisting of the following components and features:

A 5.00" pipe connected to the water supply on one end and to a water swivel at the rotation point of the turntable. The water swivel will allow the ladder to rotate 360 degrees continuously while flowing water.

A 4.00" waterway swivel is to be routed through the rotation point swivel up to the heel pin swivel. The heel pin swivel will allow the water to flow to the ladder pipe while elevating the aerial ladder from -5 degrees to 75 degrees. The heel pivot pin is not integral with the waterway swivel at any point. The design of the waterway will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

The integral telescopic water system will consist of a 4.50" diameter tube in the base section, a 4.00" diameter tube in the inner mid-section, 3.50" diameter tube in the outer mid-section and a 3.00" diameter tube in the fly section. The telescopic water pipes will be anodized aluminum.

The rotational torque will have adequate power to rotate the ladder into a full 1000 gallon per minute water stream directed at 90 degrees to the side while maintaining the 500 pound tip load.

The aerial will be capable of discharging up to 1000 gallons per minute at 100 pounds per square inch parallel to the ladder and 90 degrees to each side of center while maintaining the fully rated tip load.

An adjustable intake relief valve will be furnished to protect the aerial waterway from a pressure surge.

A 1.50" drain valve will be located at the lowest point of the waterway system.

WATERWAY SEALS

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

AERIAL MONITOR

An Akron, Model 3598 monitor with stow and deploy will be provided at the tip with an Akron 2000 GPM; Model 5178 nozzle. This monitor will allow for an additional 30 degrees of travel above horizontal at the aerial tip.

The monitor's functions will be controlled electrically from two (2) separate locations. One (1) control will be located at the control console and the other at the ladder tip.

There will be a courtesy light at the tip of the aerial to illuminate the controls.

If the aerial has a quick-lock waterway, a limit switch will be provided to disable the extended vertical travel when the monitor is locked to the lower ladder section.

FLOW METER (AERIAL WATERWAY)

A Class I Flow-Minder, with totalizer, will be provided for the aerial waterway. The flowmeter will be located at the turntable control station.

REAR INLET

A 5.00" NST inlet to the aerial waterway will be provided at the rear of the apparatus. It will be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.

WATERWAY LOCKING SYSTEM

The aerial ladder waterway monitor will be capable of being positioned at either the fly section or at the next lower section of the ladder.

The monitor location will be changeable by the use of a single handle, located at the side of the ladder.

The handle, attached to a cam bracket, will simply be moved forward to lock the monitor at the fly section and back to lock it to the previous section.

There will be no pins to remove and reinstall.

The monitor will be operational at all times, regardless of its position, without connecting or disconnecting electrical lines.

WATERWAY SHUTOFF VALVE

A 5.00" electric operated butterfly valve will be installed in the aerial waterway. The switch for the valve will be located at the turntable console of the apparatus.

There will be a preset relief valve in the waterway between the butterfly valve and the monitor to protect the waterway when retracting.

TOOLS

The following tools will be provided for retorquing of all specified bolts as recommended by the manufacturer:

- Torque Wrench

- All Required Extensions, Sockets and Adapters

- 4-to-1 Multiplier

MANUALS

Two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device will be provided with the apparatus at time of pick-up.

INITIAL INSTRUCTION

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) days.

LOOSE EQUIPMENT

The following equipment will be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

PAINT

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom body will be thoroughly cleaned and prepared for painting. Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate. Each imperfection on the exterior metal surface will be removed or filled and then sanded smooth for a smooth appearance. All seams will be sealed before painting.

2. Chemical Cleaning and Treatment - The aluminum surfaces will be properly cleaned using a four (4)-phase, high pressure and high temperature acid etching system. All steel surfaces will be properly treated using a three (3)-phase, high temperature, cleaning/phosphatizing system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse of 25 parts per million solids or less, will be applied to final rinse all metal surfaces at the conclusion of the metal treatment process. This final rinse ensures all chemical residues are removed and that no minerals, (salts), from the water dry onto the metal surface and remain under the primers and topcoats. These salts can lead to blistering and under film corrosion.

3. Primer/Surfacer Coats - A minimum of two (2) mil dry, (.002), of two component urethane primer/surfacer will be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. The primer is a high solids and low VOC paint.

4. Hand Sanding to Ultra Fine Finish - The primer/surfacer coat is lightly sanded with mild abrasive paper to an ultra smooth finish. This hand finish process is critical to produce the smooth mirror like finish in the topcoat.

5. Sealer Primer Coat - A two (2) component sealer primer coat is applied over the sanded primer to again build toward the final smooth finish. This layer of primer sealer also gives additional corrosion protection.

6. Topcoat Paint - Two (2) coats of an automotive grade, two component acrylic urethane paint are applied to provide the lasting beauty and durability. The acrylic urethane topcoat contains a clear coat resin chemistry that creates the high gloss and depth of image. This type of topcoat provides the best resistance against acid rain and other more common chemicals.

7. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied. Lap style doors will be clear coated to match the body. Roll-up doors will not be clear coated and the standard roll-up door warranty will apply.

A cyclic corrosion test, (General Motors test GM-9540), of 40 cycles will be required before making changes to the exterior coating process. Exterior coating systems, (excluding the undercarriage components), must achieve a 1/16 or less maximum creep from the scribe for aluminum and an 1/8 or less maximum creep from the scribe for galvanneal after 40 cycles in the General Motors GM-9540 test.

Each batch of color topcoat, together with the finish painted vehicle, is tested for precise color match. Visual color match will be checked following ASTM D-1729, (American Standard Testing Methods), procedures using CIE, (International Commission on Illumination), D75 Northern Daylight light source. Instrumental color match will follow ASMT D-2244 procedures with a maximum delta E of 1.0 for whites, 1.4 for yellows, blues, greens and 1.5 for reds.

All removable items such as brackets, compartment doors, door hinges, trim, etc. will be removed and painted separately to insure paint behind all mounted items. Body assemblies that can not be finish painted after assembly will be finish painted before assembly.

The cab and the body will be painted RED - paint color determined at drawing approval.

Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous body items, an isolation tape or gasket material will be used to prevent damage to the finish painted surfaces. A nylon washer will be installed under each acorn nut or metal screw that is fastened directly to a painted body surface.

PAINT - ENVIRONMENTAL IMPACT

Contractor will meet or exceed all current State (his) regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.

- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.

- Particulate emission collection from sanding operations must have a 99.99 percent efficiency factor.

- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter means is used, it must have an efficiency rating of 98 percent. Water wash systems will be 99.97 percent efficient.

- Water from water wash booths will be reused. Solids will be removed mechanically on a continual basis to keep the water clean.

- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material.

- Empty metal paint containers will be cleaned, crushed and recycled to recover the metal.

- Solvents used in clean-up operations will be collected, recycled on-site, or sent off-site for distillation and returned for reuse. Residue from the distillation operation will be used as fuel in off-site cement kilns.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly will be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

PAINTED AIR CONDITIONING COVER AND MOUNTS

The cover of the air conditioning condenser and the mounting feet will be painted to match the color of the cab roof.

COMPARTMENT LINING

There will be eleven (11) interior body compartments that will finished with Line-X spray on polyurethane/polurea material each equipment compartment. The interior lining will be light gray in color.

The lining will be properly installed by an authorized Line-X dealer.

AERIAL DEVICE PAINT COLOR

The aerial device paint procedure will consist of a six (6) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the aerial device structural components above the rotation point will be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting.

2. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer will be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams will be caulked before painting.

3. Hand Sanding - The primer/surfacer coat will be lightly sanded to an ultra smooth finish.

4. Sealer Primer Coat - A two (2) component sealer primer coat will be applied over the sanded primer.

5. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.

6. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied.

Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Removable items such as brackets will be removed and painted separately to ensure paint coverage behind all mounted items.

The aerial device (turntable and ladder sections) will be painted - paint color determined at drawing approval using the six (6) step finishing process.

The support structure, rotation motor, components below the rotation point and the stabilizers will be cleaned, caulked, primed and painted high gloss black.

The tip of the ladder willl be painted a contrasting color for high visibility.

REFLECTIVE STRIPES

Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the cab and apparatus body. The reflective band will consist of a 1.00" blue stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" blue stripe on the bottom.

The reflective band provided on the cab face will be at the headlight level.

JOG, IN REFLECTIVE STRIPE

There will be two (2) "Hockey Stick" style jogs in the reflective stripe located on each side of the vehicle. Each stripe will be angled upward at approximately a 45 degree angle.

CHEVRON STRIPING, REAR

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces will include the rear wall and aluminum doors. Rear compartment doors, stainless steel access doors, and the rear bumper will not be covered.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface will be covered with chevron striping.

REFLECTIVE STRIPE ON STABILIZERS, IPOS

There will be 4.00" wide alternating fluorescent yellow green diamond grade and ruby red reflective chevron stripes provided on the forward and rear facing sides of all four (4) aerial stabilizers. The stripes will be angled at a 45 degree angle.

CHEVRON, INVERTED "V" STRIPING ON CAB AND CREW CAB DOORS

There will be alternating chevron striping located on the inside of each cab and crew cab door.

The striping will consist of the following colors:

The first color will be red diamond grade

The second color will be fluorescent yellow green diamond grade

The size of the striping will be 4.00".

BOOM SIGN STRIPING
There will be genuine gold leaf stripes along all edges of the aerial boom sign.

LETTERING
The lettering will be totally encapsulated between two (2) layers of clear vinyl.

LETTERING
Forty-one (41) to sixty (60) genuine gold leaf letters, 3.00" high, with outline and shade will be provided.

LETTERING
There will be reflective lettering, 3.00" high, with outline and shade provided. There will be 20 letters provided.

LETTERING
There will be reflective lettering, 8.00" high, with outline provided. There will be one (1) letter provided.

LETTERING
There will be genuine gold leaf letters, 10.00" high, with outline provided. There will be six (6) letters provided.

LETTERING
There will be reflective lettering, 4.00" high, with outline and shade provided. There will be six (6) letters provided.

LETTERING
There will be reflective lettering, 5.00" high, with outline and shade provided. There will be 20 letters provided.

LETTERING
There will be reflective lettering, 10.00" high, with outline and shade provided. There will be 18 letters provided.

LETTERING
There will be reflective lettering, 24.00" high, with outline provided. There will be two (2) letters provided.

LETTERING
There will be genuine gold leaf lettering, 6.00" high, with outline and shade provided. There will be 18 letters provided.

LETTERING

There will be reflective lettering, 6.00" high, with outline and shade provided. There will be two (2) letters provided.

PAINTED PLATE(S) FOR LETTERING/NUMERALS

There will be two (2) painted aluminum plates provided for department lettering. They will be mounted the aerial fly section and will be 12" x 12" in size.

RUSTPROOF / UNDERCOAT, CUSTOM CHASSIS

The rust proof/undercoat option will provide protective coating that will help fight corrosion.

Rustproof / Undercoat Process

A coating will be applied to the custom chassis once the cab, pump and body mounting angles have been installed. The coating texture will be waxy and pliable after drying so it will not chip, crack, or peel off during normal vehicle operations.

The rust proofing material will be the color black, and is a coating of a corrosion inhibitor for long-term protection against corrosion.

The material will be applied to the following areas:

-Outside of the chassis frame rails (top & side)

-Top of the frame rails

-Top of crossmembers

-Inside of the frame rails - in and around harnesses keeping coating off harnesses as best as possible

-Between the frame and liner - coating will be applied after frame and liner are assembled using a wand to apply material between as best as possible

-Top of the body mounting angles (including rear platform)

-Top of air tanks

-Top of fuel tank

RUST PROOF, TORQUE BOX

A coating will be applied to the bottom and the two (2) sides of the torque box. The coating texture will be waxy and pliable after drying so it will not chip, crack, or peel off during normal vehicle operations.

The rust proofing material will be black, and is a coating of a corrosion inhibitor for long-term protection against corrosion.

MANUAL, FIRE APPARATUS PARTS

Two (2) custom parts manuals for the complete fire apparatus will be provided in hard copy with the completed unit.

One (1) compact disc (CD) will also be provided that will include all of the information from the above manual.

The manual will contain the following:

- Job number

- Part numbers with full descriptions

- Table of contents

- Parts section sorted in functional groups reflecting a major system, component, or assembly

- Parts section sorted in Alphabetical order

- Instructions on how to locate parts

The manual will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

SERVICE PARTS INTERNET SITE

The service parts information included in this manual is also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

MANUALS, CHASSIS SERVICE

Two (2) chassis service manuals containing parts and service information on major components will be provided with the completed unit.

One (1) compact disk (CD) will also be provided that will include all of the information from the above manual.

The manuals will contain the following sections:

- Job number

- Table of contents

- Troubleshooting

- Front Axle/Suspension

- Brakes

- Engine

- Tires

- Wheels

- Cab

- Electrical, DC

- Air Systems

- Plumbing

- Appendix

The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

MANUALS, CHASSIS OPERATION

Two (2) chassis operation manuals will be provided.

One (1) compact disk (CD) will also be provided that will include all of the information from the above manual.

ONE (1) YEAR MATERIAL AND WORKMANSHIP

A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

ENGINE WARRANTY

A Cummins five (5) year limited engine warranty will be provided. A limited warranty certificate, WA0181, is included with this proposal.

STEERING GEAR WARRANTY

A TRW one (1) year limited steering gear warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FIFTY (50) YEAR STRUCTURAL INTEGRITY

The Pierce custom chassis frame limited warranty certificate, WA0013, is included with this proposal.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY

A Meritor™ Axle 3 year limited warranty will be provided.

REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY

A Meritor axle limited warranty certificate, WA0046, is included with this proposal.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY

A Meritor Wabco™ABS brake system limited warranty certificate, WA0232, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

TRANSMISSION WARRANTY

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

An AMDOR roll-up door limited warranty shall be provided. The roll-up door shall be warranted against manufacturing defects for a period of ten (10) years. A five (5) year limited warranty shall be provided on painted roll up doors.

A copy of the warranty certificate will be submitted with the bid package.

TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY

The Pierce device limited warranty certificate, WA0052, is included with this proposal.

AERIAL SWIVEL WARRANTY

An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

HYDRAULIC SYSTEM COMPONENTS WARRANTY

Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

HYDRAULIC SEAL WARRANTY

Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.

A copy of the warranty certificates will be submitted with the bid package.

AERIAL WATERWAY WARRANTY

An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FOUR (4) YEAR PRO-RATED PAINT AND CORROSION

A Pierce aerial device limited pro-rated paint warranty certificate, WA0047, is included with this proposal.

TWO (2) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY

A Harrison Hydra-Gen limited warranty certificate, WA0051, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

THREE (3) YEAR MATERIAL AND WORKMANSHIP

The Pierce Goldstar gold leaf lamination limited warranty limited warranty certificate, WA0018, is included with this proposal.

VEHICLE STABILITY CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of bid.

POWER STEERING CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

Pierce manufacturing will provide a cab crash test certification with this proposal.

The certification states that the cab must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks

- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks

- Roof Crush

The cab will be subjected to a roof crush force of 100,000 lb. This value will be 450 percent of the ECE 29 criteria, which must be equivalent to the front axle rating up to a maximum of ten (10) metric tons.

- Side Impact

The cab will be subjected to dynamic preload with a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of energy. This test will closely represent the forces a cab will see in a rollover incident.

- Frontal Impact

The cab will withstand a frontal force produced from 65,200 ft-lb of energy using a swing-bob type platen.

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

CAB DOOR DURABILITY CERTIFICATION

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

SEAT BELT ANCHOR STRENGTH

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify that each

seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

AMP DRAW REPORT

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

1) Documentation of the electrical system performance tests.

2) A written load analysis, which will include the following:

A) The nameplate rating of the alternator.

B) The alternator rating under the conditions specified per:

- Applicable NFPA 1901 or 1906 (Current Edition).

C) The minimum continuous load of each component that is specified per:

- Applicable NFPA 1901 or 1906 (Current Edition).

D) Additional loads that, when added to the minimum continuous load, determine the total connected load.

E) Each individual intermittent load.

All of the above listed items will be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

EXCEPTIONS REMARKS AND CLARIFICATIONS

LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT

FINAL PAYMENT ----- The Pierce proposal is contingent upon The Lexington Fayette Urban County Government paying the balance due on the apparatus upon pick up of the completed apparatus at Pierce Manufacturing. If the payments herein stated are not acceptable; the sum of ---$ 185.00 per day must be added to the total invoice. It is to be understood that payment under no circumstances will be later than 5 days from said invoice. It is to be understood that for any miscellaneous equipment shortage, payment may be withheld until said equipment is received by The Lexington Fayette Urban County Government. If a Lease Purchase or deferred payment plan is being utilized, all documents must be complete and credit approval obtained 60 days prior to delivery.

PREPAY OPTION #1 ----- If The Lexington Fayette Urban County Government desires to make a pre-payment towards the total price of the apparatus; Pierce Manufacturing Inc. will discount the price of the apparatus in the amount of 5% interest per annum **(APR).**

PREPAY OPTION #2 ----- If The Lexington Fayette Urban County Government desires to pay for the Arrow XT chassis only upon construction the sum of $ 384,651.00; they may deduct the sum of $ 11,540.00.

FINANCING ----- Apparatus financing may be provided upon request from Oshkosh Capital Leasing.

FACTORY TRIPS

A total of three factory trips for a total of four fire department personnel are provided in our proposal price; one for pre-construction, one post paint, and one for final inspection. These trips will include transportation, meals and lodging.

MANUFACTURER'S SPONSORED TRAINING - Four days

Factory level training will be provided by Pierce Manufacturing for the Lexington KY Division of Fire's Mechanical Bureau; training related to repair or maintenance on fire apparatus or apparatus components will be provided within one year from delivery. This training will be the equivalent of four days for two persons. All expenses associated with this training including class registration, travel, lodging, meals and course materials is included in the total proposal price.

DELIVERY - TRAINING - SERVICE ----- Delivery of the completed apparatus will be made to The Lexington Fayette Urban County Government, Lexington, Kentucky. Delivery time quoted will be 8.5 to 9 months from contract acceptance. The penalty clause in the specifications will be honored under these terms.

A full in-service and training program will be provided to the fire department upon delivery of the completed apparatus. Training will include chassis and cab orientation, body orientation, aerial operations, manuals, and warranty.

Apparatus warranty and service is provided by our fleet of traveling mechanics repairing the apparatus at Fire Department Headquarters or by our regional service center located in McConnelsville, Ohio.

PIERCE PROPOSAL ----- All items contained in this proposal are subject to a final engineering review after contract acceptance and any issues due to the configuration that may have an effect on the building of the apparatus per our proposal may have to be reviewed and possibly changed per an agreement between the customer and Pierce Manufacturing.

OPTIONS - MAY BE ADDED OR DEDUCTED PER THE FOLLOWING:

Page 15 - Detroit DD-13 - 500 HP engine in place of Cummins -- Deduct -	($9,900.00)
Page 23 - Power (electric) cab and crew cab windows -- Add -	$1,250.00
Page 61 - Roto Ray front warning light (LED) -- Add -	$2,295.00
Page 80 - Command Light Model C-Lite at aerial tip -	N/A
Page 88 - Three (3) year chassis warranty in place of one (1) year - Add -	$6,580.00

ADDITIONAL EXECPTIONS/REMARKS

#15.0 - third party part number cross reference not available.

#17.9 - 5 year warranty on electronic modules/displays only on Multiplex systems

#17.11 - 5 year transmission cooler warranty not available on Arrow XT chassis.

#4.7, 4.8, 4.13, 4.14, 4.15 - we cannot offer a reverse gear activation circuit on these lights because of the lumens standard that is mandated by DOT.

Bidders must check "YES" or "NO" to each section of the specification. A "YES" answer indicates that the bidder is in full compliance with ALL aspects of the specified item. Any variation to the specifications must be indicated as a "NO". A "NO" answer must be completely explained on a separate sheet(s), **IN BID ORDER**, citing the page number and paragraph the exception or variation is referencing.

NOTICE: FAILURE TO COMPLY WILL AUTOMATICALLY DISQUALIFY THE BID

PARA.	ITEM	YES	NO
1-0	Intent of Specifications	X	
1-1	NFPA Standards	X	
1-2	Quality and Workmanship	X	
1-3	Performance Tests	X	
1-4	Failure to Meet Test	X	
1-5	Delivery and Delivery Schedule		X
1-6	Information Required	X	
1-7	Information Required/Electronic Format	X	
1-8	Apparatus and Related Component Training	X	
1-9	Manufactured Sponsored Training	X	
1-10	Vehicle Fluids Plate	X	
1-11	Liability	X	
1-12	Exceptions to Specification Requirements	X	
1-13	General Construction	X	
1-14	Single Source Manufacturer	X	
1-15	Umbrella/Excess Liability Insurance	X	
1-16	Commercial General Liability Insurance	X	
1-17	Commercial Automobile Liability Insurance	X	
1-18	Bid Bond	X	
1-19	Performance Bond, 1 Year	X	
1-20	ISO Compliance	X	
1-21	Inspection Certificate	X	
1-22	Vehicle Inspection Program Certification	X	
1-23	Generator Test	X	
1-24	Approval Drawing	X	
1-25	Pre-Construction and Inspection Trips	X	

		YES	NO
2-0	Chassis	X	
2-1	Maximum Overall Height	X	
2-2	Wheelbase	X	
2-3	GVW Rating	X	
2-4	Frame	X	
2-5	Frame Reinforcement	X	
2-6	Corrosion Protection	X	
2-7	Front Non Drive Axle	X	
2-8	Front Suspension	X	
2-9	Shock Absorbers		X
2-10	Oil Seals	X	
2-11	Front Tires	X	
2-12	Rear Axle	X	
2-13	Top Speed of Vehicle	X	
2-14	Rear Suspension	X	
2-15	Oil Seals	X	
2-16	Rear Tires		X
2-17	Tire Balance	X	
2-18	Tire Pressure Management	X	
2-19	Hub Covers (front)	X	
2-20	Hub Covers (rear)	X	
2-21	Covers, Lug Nut, Chrome	X	
2-22	Mud Flaps	X	
2-23	Wheel Chocks	X	
2-24	Wheel Chock Brackets	X	
2-25	Electronic Stability Control	X	
2-26	Anti-Lock Brake System	X	
2-27	Automatic Traction Control	X	
2-28	Electronic Stability Control System, Anti-Lock Brake System &Automatic Traction Control Warranty	X	
2-29	Brakes		X
2-30	Air Compressor, Brake System	X	
2-31	Brake System	X	
2-32	Brake Lines	X	
2-33	Air Inlet	X	
2-34	Air Outlet	X	
2-35	All Wheel Lock-Up	X	
2-36	Air Tank, Additional	X	
2-37	Guard, Front Wheel Lock	X	
2-38	U-Bolt Guard Over Parking Brake Knob	X	
2-39	Park Brake Control (additional)	X	
2-40	Engine	X	

2-40-1	Cummins, 2010 Model ISX15 600		X
2-40-2	Detroit, 2010 Model DD13 (Optional)	X	
		Yes	No
2-41	High Idle	X	
2-42	Engine Brake	X	
2-43	Driveline Retarder	X	
2-44	Clutch Fan	X	
2-45	Engine Air Intake	X	
2-46	Exhaust System	X	
2-47	Exhaust Modification	X	
2-48	Radiator	X	
2-49	Coolant Lines	X	
2-50	Fuel Tank	X	
2-51	Diesel Exhaust Fluid Tank		X
2-52	Auxiliary Fuel Pump	X	
2-53	Fuel Shut Off	X	
2-54	Fuel Cooler	X	
2-55	Fuel Separator	X	
2-56	Transmission	X	
2-57	Transmission Shifter	X	
2-58	Transmission Cooler	X	
2-59	Transmission Fluid	X	
2-60	Driveline	X	
2-61	Steering	X	
2-62	Bumper	X	
2-63	Lift and Tow Mounts	X	
2-64	Tow Eyes	X	
2-65	Gravel Pan	X	

3-0	Cab	X	
3-1	Engine Tunnel	X	
3-2	MDT Mount	X	
3-3	Fender Liners	X	
3-4	Windshield	X	
3-5	Sunvisors	X	
3-6	Windshield Wipers	X	
3-7	Cab Rear Wall Exterior Covering	X	
3-8	Cab Lift	X	
3-9	Interlock, Cab Lift to Parking Brake	X	
3-10	Grille	X	
3-11	Door Jamb Scuffplates	X	
3-12	Molding (on side of cab)	X	
3-13	Mirrors	X	
3-14	Doors	X	
3-15	Electric Window Controls	X	

3-16	Cab Steps	X	
3-17	Stirrup Steps with Grip Strut	X	
		Yes	No
3-18	Step Lights	X	
3-19	Fender Crowns	X	
3-20	Crew Cab Windows	X	
3-21	Window Tint	X	
3-22	Storage Compartment	X	
3-23	Antenna Access Panel	X	
3-24	Cab Interior	X	
3-25	Cab Interior Upholstery	X	
3-26	Interior Paint (Cab)	X	
3-27	Cab Floor	X	
3-28	Cab Defroster	X	
3-29	Cab/Crew Cab Heater	X	
3-30	Cab/Crew Air Conditioning	X	
3-31	Interior Cab Insulation	X	
3-32	Grab Handle	X	
3-33	Engine Compartment Light	X	
3-34	Access to Engine Dipsticks	X	
3-35	Cab Safety System	X	
3-36	Frontal Impact Protection	X	
3-37	Side Roll Protection	X	
3-38	Seating Capacity	X	
3-39	Driver's Seat		X
3-40	Officer's Seat		X
3-41	Rear Facing Passenger's Side Outboard Seat		X
3-42	Forward Facing Driver's Side Outboard Seat		X
3-43	Forward Facing Center Seat		X
3-44	Forward Facing Passenger's Side Outboard Seat		X
3-45	Seat Upholstery	X	
3-46	Back Rest Inserts	X	
3-47	Seat Belts	X	
3-48	Seat Belt Monitoring System	X	
3-49	Driver's SCBA Compartment	X	
3-50	Compartment Light	X	
3-51	Radio Compartment	X	
3-52	Helmet Holder	X	
3-53	Cab Dome Lights		X
3-54	Crew Cab Dome Lights		X
3-55	Hand Held Spotlight	X	
3-56	Cab Instrumentation	X	
3-57	Gauges		X
3-58	Indicator Lamps	X	
3-59	Alarms	X	

3-60	Indicator Lamp and Alarm Prove-Out	X	
3-61	Officer's Speedometer	X	
		Yes	No
3-62	Control Switches	X	
3-63	Custom Switch Panels	X	
3-64	Diagnostic Panel	X	
3-65	Air Restriction Indicator	X	
3-66	"DO NOT MOVE APPARATUS" Indicator	X	
3-67	Do Not Move Truck Messages		X
3-68	Switch Panels	X	
3-69	Wiper Control	X	
3-70	Hour meter – Aerial Device	X	
3-71	Aerial Master	X	
3-72	Aerial PTO	X	
3-73	12 Volt Power Points (3)	X	
3-74	Vehicle Data Recorder	X	
3-75	Radio Antenna Mount	X	
3-76	Rear Vision System	X	
3-77	Guard, Rear Body Camera	X	
3-78	Electrical Power Control System	X	
3-79	On-Board Advanced/Visual Electrical System Diagnostics		X
3-80	Advanced Diagnostics		X
3-81	Indicator Light and Alarm Prove-Out System		X
3-82	Voltage Monitor System	X	
3-83	Exterior Radio Speaker for Fireground	X	
3-84	Dedicated Radio Equipment Connection Points	X	
3-85	Intercom System	X	
3-86	EMI/RFI Protection	X	
3-87	Electrical Harnessing Installation	X	
3-88	Battery Cable Installation	X	
3-89	Electrical Component Installation	X	
3-90	Battery System	X	
3-91	Battery System	X	
3-92	Master Battery Switch	X	
3-93	Battery Compartments	X	
3-94	Jumper Studs	X	
3-95	Battery Charger	X	
3-96	Kussmaul Auto Eject for Shoreline	X	
3-97	Alternator	X	
3-98	Electronic Load Manager	X	
3-99	Sequencer	X	
3-100	Shoreline Power Strip		X

		YES	NO
4-0	Exterior Lighting/Alarm	X	
4-1	Rear ID/Marker DOT Lighting	X	
4-2	Marker Lights	X	
4-3	Rear FMVSS Lighting	X	
4-4	Lighting Bezel	X	
4-5	Back-Up Alarm	X	
4-6	Light, Intermediate	X	
4-7	Perimeter Scene Lights, Cab	X	
4-8	Perimeter Scene Lights, Body	X	
4-9	Step Lights	X	
4-10	Scene Lights	X	
4-11	Additional Activation Scene Lights	X	
4-12	12 Volt Lighting		X
4-13	Deck Lights	X	
4-14	Ground Lights – Rear		X
4-15	Recessed 75W Pioneer LED Floodlights – Rear	X	
4-16	Step Lights	X	

5-0	Compartmentation	X	
5-1	Aggressive Walking Surface	X	
5-2	Louvers	X	
5-3	Transverse Compartment	X	X
5-4	Driver's Side Compartmentation	X	
5-5	Passenger's Side Compartmentation	X	
5-6	Roll-Up Door, Side Compartments	X	
5-7	Door Guard	X	
5-8	Rear Bumper	X	
5-9	Compartment Lighting	X	
5-10	Mounting Tracks	X	
5-11	Adjustable Shelves	X	
5-12	Pull-Out Tray	X	
5-13	Below Body Pull-Out Aluminum Tread plate Drawer		X
5-14	Rub Rail	X	
5-15	Body Fender Crowns	X	
5-16	Air Cylinder Storage (Double Bottle)		X
5-17	Turntable Steps	X	
5-18	Rear Wall, Smooth Aluminum	X	
5-19	Tow Eyes	X	

		YES	NO
6-0	Ladders, Storage, Pike Poles	X	
6-1	Extension Ladder	X	
6-2	Added Extension Ladder	X	
6-3	Roof Ladder	X	
6-4	Additional Roof Ladder	X	
6-5	Folding Ladder, Aerial	X	
6-6	Roof Ladder (Dormer)	X	
6-7	Ground Ladder Storage	X	
6-8	Pike Poles	X	
6-9	Pike Pole 8 FT	X	
6-10	Pike Pole 6 FT	X	
6-11	Pike Pole 3 FT	X	
6-12	Velcro Retention Straps	X	

7-0	Audible Warning and Emergency Response Lighting	X	
7-1	Air Horn System	X	
7-2	Air Horn Control	X	
7-3	Mechanical Siren	X	
7-4	Light bars (Cab Roof)	X	
7-5	Warning Lights (Cab Face)	X	
7-6	Switch for White Warning Lights	X	
7-7	Daytime Running Lights (Headlights)	X	
7-8	Headlight Flasher	X	
7-9	Side Zone Lower Lighting	X	
7-10	Interior Cab Door Warning Lights	X	
7-11	Rear Zone Lower Lighting	X	
7-12	Warning Lights	X	
7-13	Rear Arrow Stick	X	

8-0	Electrical System General Design for Alternating Current	X	
8-0-1	General	X	
8-0-2	Grounding	X	
8-0-3	Operation	X	
8-0-4	Over Current Protection	X	
8-0-5	Wiring Methods	X	
8-0-6	Wiring Identification	X	
8-0-7	Wet Locations	X	
8-0-8	Dry Locations	X	
8-0-9	Listing	X	
8-0-10	Electrical System Testing	X	
8-0-12	Operational Test per Current NFPA 1901 Standard	X	

		YES	NO
9-0	Generator	X	
9-1	Generator Instruments and Controls	X	
9-2	Generator Wiring	X	
9-3	Wiring	X	
9-4	LOAD CENTER	X	
9-5	Circuit Breakers	X	
9-6	Generator Location	X	
9-7	Generator Start	X	
9-8	Circuit Breaker Panel	X	
9-9	Ground Fault Circuit Interrupter	X	
9-10	240 Volt Lighting	X	
9-11	Electric Cord Reels (2)	X	
9-12	Portable Junction Box	X	
9-13	20 AMP Receptacle	X	

10-0	Four (4) – Section 100 Foot (Minimum) Aerial Ladder	X	
10-1	Construction Standards	X	
10-2	Ladder Construction	X	
10-3	Vertical Height	X	
10-4	Horizontal Reach	X	
10-5	Turntable	X	
10-6	Elevation System	X	
10-7	Extension/Retraction System	X	
10-8	Rotation System	X	
10-9	Rotation Interlock	X	
10-10	Load Minder	X	
10-11	Collision Avoidance	X	
10-12	Torque Box	X	
10-13	Load Capacities	X	
10-14	Boom Support	X	
10-15	Aerial Sign Panel for Lettering	X	
10-16	Extension Indicator	X	
10-17	Folding Steps	X	
10-18	Aerial Device Rung Covers	X	
10-19	Ladder Storage Mounting Brackets	X	
10-20	Pike Pole Mounting Brackets	X	
10-21	Axe Mounting Brackets	X	
10-22	Storage Box at Turntable	X	
10-23	Turntable Control Station	X	
10-24	Remote Aerial Control	X	
10-25	Stabilizers	X	
10-26	Stabilizer Pad	X	

10-27	Auxiliary Stabilizer Pads	X	
10-28	Stabilizer Controls	X	
		Yes	No
10-29	Splash Guard For Rear Controls	X	
10-30	Stabilizer Pins	X	
10-31	Hydraulic System	X	
10-32	Hydraulic Cylinders	X	
10-33	Hydraulic Pump	X	
10-34	Emergency Pump	X	
10-35	Aerial Control Valve	X	
10-36	Oil Reservoir	X	
10-37	High Pressure Filter	X	
10-38	Return Filter	X	
10-39	Hydraulic Swivel	X	
10-40	Electric Swivel	X	
10-41	Electrical System	X	
10-42	Driver Side Torque Box Power Distribution Panel	X	
10-43	Turntable Lighting	X	
10-44	Aerial Foot Switch	X	
10-45	Turntable Override Controls	X	
10-46	Master Override Controls	X	
10-47	Boom Support	X	
10-48	Stabilizer Indicator	X	
10-49	Cradle Interlock System	X	
10-50	Stabilizer Alarm	X	
10-51	Stabilizer Scene Lights	X	
10-52	Stabilizer Warning Lights	X	
10-53	Stabilizer Beam Warning Lights	X	
10-54	120-Volt Receptacle at Tip	X	
10-55	240-Volt Lighting, Tip of Ladder		X
10-56	Rung Lighting on Aerial Ladder	X	
10-57	Tip / Tracking Lights	X	
10-58	3-Way Aerial Communication System	X	
10-59	Lifting Eye – Rope Rescue Attachment	X	
10-60	Water System	X	
10-61	Waterway Seals	X	
10-62	Aerial Monitor		X
10-63	Dual Position Waterway	X	
10-64	Flow Meter (Aerial Waterway)	X	
10-65	Rear Inlet	X	
10-66	Tools	X	
10-67	Manuals	X	

11-0	Loose Equipment	X	

12-0	Paint	X	
12-1	Paint - Environmental Impact	X	
12-2	Paint Chassis Frame Assembly	X	
12-3	Air Conditioning Cover and Mounts	X	
12-4	Paint, Compartment Interior	X	
12-5	Aerial Device Paint Color	X	

13-0	Reflective Stripes	X	
13-1	Jogs in Reflective Band	X	
13-2	Chevron Striping	X	
13-3	Reflective Stripe On Stabilizer, IPOS	X	
13-4	Reflective Stripe, Cab Doors	X	

14-0	Boom Sign Striping	X	
14-1	Lettering	X	
14-2	Lettering (cab and body)	X	
14-3	Lettering (cab)	X	
14-4	Lettering (aerial boom panel)	X	
14-5	Lettering (aerial boom panel)	X	
14-6	Lettering	X	
14-7	Lettering	X	
14-8	Lettering	X	
14-9	Rear Compartment Door Lettering	X	
14-10	Rear Ladder Tunnel Door Lettering	X	
14-11	Front Bumper Lettering	X	
14-12	Plate for Department Numbers	X	

15-0	Manual, Fire Apparatus Parts	X	
15-1	Service Parts Internet Site	X	

16-0	Manuals, Chassis Service	X	
16-1	Manuals, Chassis Operation	X	

17-0	One (1) Year Material and Workmanship	X	
17-1	Three (3) Year Material and Workmanship		X
17-2	Engine Warranty	X	
17-3	Steering Gear Warranty	X	
17-4	Fifty (50) Year Structural Integrity	X	
17-5	Front Axle Three (3) Year Material and Workmanship Warranty	X	
17-6	Rear Axle Two (2) Year Material and Workmanship Warranty	X	
17-7	Ten (10) Year Structural Integrity	X	
17-8	Paint and Corrosion	X	
17-9	Five (5) Year Material and Workmanship	X	
17-10	Transmission Warranty	X	
17-11	Transmission Cooler Warranty	X	

17-12	Ten (10) Year Structural Integrity	X	
17-13	Roll Up Door Material and Workmanship Warranty	X	
		YES	NO
17-14	Twenty (20) Year Aerial Device Structural Integrity Warranty	X	
17-15	Aerial Swivel Warranty	X	
17-16	Hydraulic System Components Warranty	X	
17-17	Hydraulic Seal Warranty	X	
17-18	Aerial Waterway Warranty	X	
17-19	Four (4) Year Pro-Rated Paint and Corrosion	X	
17-20	Ten (10) Year Pro-Rated Paint and Corrosion	X	
17-21	Three (3) Year Material and Workmanship	X	
17-22	Vehicle Stability Certification	X	
17-23	Engine Installation Certification	X	
17-24	Power Steering Certification	X	
17-25	Cab Integrity Certification	X	
17-26	Cab Door Durability Certification	X	
17-27	Windshield Wiper Durability Certification	X	
17-28	Electric Window Durability Certification	X	
17-29	Seat Belt Anchor Strength	X	
17-30	Seat Mounting Strength	X	
17-31	Cab Defroster Certification	X	
17-32	Cab Heater Certification	X	
17-33	Cab Air Conditioning Performance Certification	X	
17-34	AMP Draw Report	X	

BIDDER_____

SIGNATURE_____

EXCEPTIONS AND CLARIFICATIONS:

PAGE	PARAGRAPH	ITEM	REASON
10	2-9	SHOCK ABSORBERS	MONROE MAGNUM FRONT SHOCK ABSORBERS WILL BE PROVIDED - KONI ARE ONLY AVAILABLE WITH THE PIERCE INDEPENDENT SUSPENSION SYSTEM.
11	2-16	REAR TIRES	REAR TIRES WILL BE MICHELIN XZE.
12	2-29	FRONT BRAKES	FRONT BRAKES WILL BE MERRITOR EX-225 - 17" DISC.
14	2-40-1	ENGINE	THE ENGINE PROVIDED WILL BE A CUMMINS ISX-12 - 500 HP -- 1645 FTLB TORQUE - THE 600 HP ISX-15 IN NOT AVAILABLE IN THE ARROW XT CHASSIS.
17	2-51	DEF TANK	THE DEF TANK WILL BE LOCATED IN THE APPARATUS BODY IN THE FORWARD FENDER PANEL AREA.
28/29/30	3-39/40/41/42/43/44	CAB SEATS	THE CAB SEATS WILL BE BOSTROM PER THE PIERCE PROPOSAL.
32	3-53/3-54	CAB AND CREW DOME LIGHTS	THE CAB AND CREW DOME LIGHTS WILL BE WELDON #8080-7000-13 - LED - DOME LIGHTS IN THE SPECIFICATIONS ARE ONLY AVAILABLE WITH A MULTIPLEXED ELECTRICAL SYSTEM.
33	3-57	CAB GAUGES	THE CAB GAUGES WILL BE STANDARD PER OUR ARROW XT CHASSIS NON-MUX - BLACK GAUGES WITH BLACK BEZELS.
38	3-67	"DO NOT MOVE TRUCK MESSAGE"	DUE TO THE CHASSIS BEING NON-MUX, THE COLOR SCREEN TYPE WARNING SYSTEM IS NOT AVAILABLE.
41	3-79/3-80/3-81	ADVANCED VISUAL DIAGNOSTICS	DUE TO THE CHASSIS BEING NON-MUX, THE ADVANCED VERSION OF THE DIAGNOSTICS IS NOT AVAILBLE.
45	3-90	BATTERY SYSTEM	THE BATTERY SYSTEM IN THE PIERCE PROPOSAL IS REQUIRED DUE TO THE AMP DRAW OF THE TELMA RETARDER SYSTEM.
48	3-100	120 VAC OUTLETS	THIS SECTION OF THE SPECIFICATIONS CALLS FOR TWO 120 VAC SHORELINE OUTLETS - NOT A SHORELINE POWER STRIP - THE TWO OUTLETS ARE PROVIDED.
51	4-12	CAB BROW SCENE LIGHTS	DUE TO THE NOTCHED CAB THE WHELEN PFP2 LIGHTS WILL NOT FIT IN THIS AREA - PFP1 LIGHTS ARE PROVIDED.
52	4-14	REAR GROUND LIGHTS	THE REAR GROUND "PERIMETER" LIGHT WILL BE 20" LONG.
53	5-3	LITTLE GIANT LADDER	AS A CLARIFICATION, LITTLE GIANT HAS REVISED THEIR MODEL NUMBERS - A #10402 - 17 LADDER TAKES THE PLACE OF THE LADDER CALLED FOR IN THE SPECIFICATIONS AND WILL BE PROVIDED ACCORDINGLY.
56	5-12	BELOW BODY COMPARTMENT	THE BELOW BODY COMPARTMENT WILL BE 23" DEEP DUE TO THE AVAILABLE SPACE UNDER THE APPARATUS BODY.
56	5-16	AIR CYLINDER STORAGE	THE AIR CYLINDER AND FIRE EXTINGUISHER STORAGE PROVIDED IN THE REAR BODY FENDER PANELS IS DESIGNED TO UTILIZE THE MOST SPACE AVAILABLE.
79	10-55	240 VOLT LIGHTING LADDER TIP	THE LIGHTS PROVIDED WILL BE FIRE RESEARCH #SPA570-J20. - THE LIGHTS CALLED FOR IN THE SPECIFICATIONS EXCEED THE AMPERAGE AVAILABLE AT THE AERIAL TIP. AN OPTION WAS ALSO CALLED FOR - COMMAND LIGHT C-LITE AT THE AERIAL TIP; THIS LIGHT EXCEEDS THE AMP DRAW THAT IS AVAILABLE AT THE TIP OF THE AERIAL LADDER - A SEPARATE CABLE TO POWER THIS LIGHT IS NOT AN OPTION.

81	17-1	AERIAL MONITOR	THE AERIAL MONITOR WILL HAVE A HORIZONTAL SWEEP OF 270 DEGREES.
88	17-1	THREE YEAR CHASSIS WARRANTY	THE STANDARD CHASSIS WARRANTY IS ON YEAR - AN OPTION IS PROVIDED FOR THE THREE YEAR CHASSIS WARRANTY.

PERFORM LIKE NO OTHER

Pierce E-coating Process

7) A conditioner preparing the surface to develop the proper crystal structure of the conversion coating.
8) A zinc phosphate conversion coating of 300-500 mg/sqft for superior corrosion resistance.
9) A fresh reverse osmosis (RO) water rinse.
10) A non-chrome seal to enclose the conversion coating and create a uniform surface for the primer application.
11) Two final RO water rinses ensures all residual chemicals are removed and insulates the e-coat tank from cross contamination.

2. The coating process itself. This normally involves submerging the part into a container or vessel which holds the coating bath or solution and applying direct current electricity through the E-Coating bath using electrodes. Typically voltages of 25 - 400 volts DC are used in E-Coating. The object to be coated is one of the electrodes, and a set of "counter-electrodes" are used to complete the circuit.

Pierce Manufacturing applies 400 volts for this process when coating their frame rails.

3. After deposition, the object is normally rinsed to remove the undeposited bath. The rinsing process may utilize an ultrafilter to dewater a portion of the bath from the coating vessel to be used as rinse material.

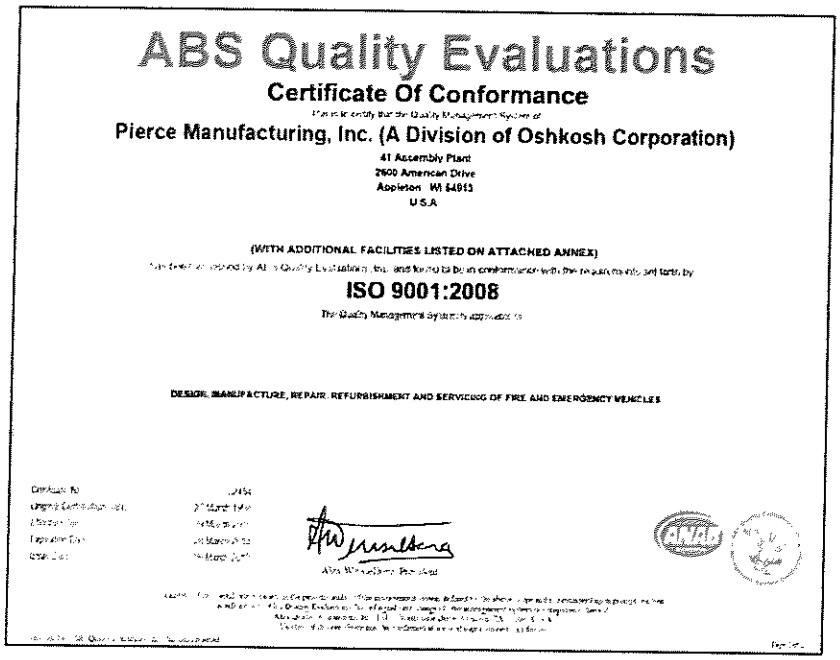
Pierce Manufacturing utilizes ultra filters with a prefilter during their process to constantly guard against contaminates, remove solids from the post rinses and achieve paint transfer efficiency of 95% or higher.

4. A baking or curing process is normally used following the rinse. This will crosslink the polymer and allows the coating to flow out and become smooth and continuous.

Pierce Manufacturing bakes the frame rails at a minimum of 350 degrees Fahrenheit for 20 minutes to ensure the crosslink of the polymers occurs.

Certification Document CD0053
ISO Certification – Pierce Appleton

Pierce Manufacturing, Inc. facilities in Appleton Wisconsin have received ISO 9001:2008 Certification as shown below.



ABS Quality Evaluations

Certificate Of Conformance

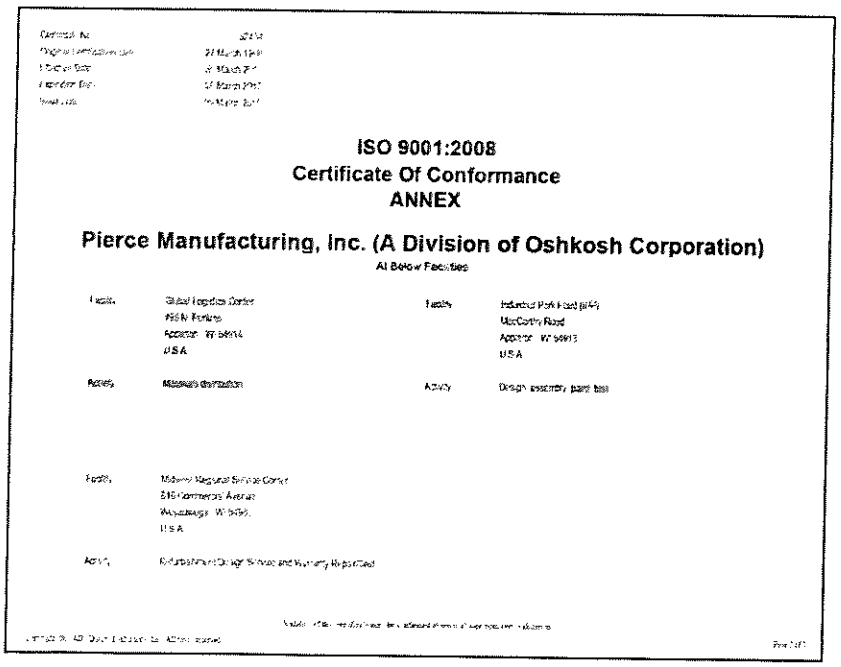
Pierce Manufacturing, Inc. (A Division of Oshkosh Corporation)

41 Assembly Plant
2600 American Drive
Appleton WI 54913
U.S.A.

(WITH ADDITIONAL FACILITIES LISTED ON ATTACHED ANNEX)

ISO 9001:2008

DESIGN, MANUFACTURE, REPAIR, REFURBISHMENT AND SERVICING OF FIRE AND EMERGENCY VEHICLES



ISO 9001:2008
Certificate Of Conformance
ANNEX

Pierce Manufacturing, Inc. (A Division of Oshkosh Corporation)
At Below Facilities

Facility: Global Logistics Center
Activity: Materials distribution

Facility: Industrial Park Road (IPR)
Activity: Design assembly paint weld

Facility: Midwest Regional Service Center
Activity: Refurbishment Design Service and Warranty Repair Hub

PIERCE MANUFACTURING INC.®

AN OSHKOSH TRUCK CORPORATION® COMPANY

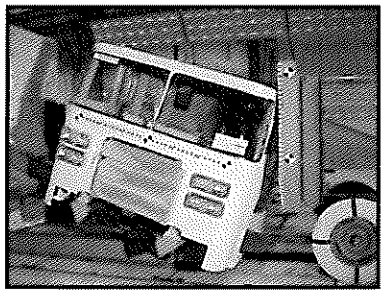
Certification Document CD0011
Arrow XT®
Cab Integrity Certification

Pierce Manufacturing certifies the integrity of the Arrow XT® cab relative to occupant protection.

A specimen representing the substantial structural configuration of the Arrow XT® cab model has been successfully tested in accordance with the following standards.

- SAE J2422 Cab Roof Strength Evaluation – Quasi-Static Loading Heavy Trucks.
- European Occupant Protection Standard ECE Regulation No. 29.
- SAE J2420 COE Frontal Strength Evaluation – Dynamic Loading Heavy Trucks.

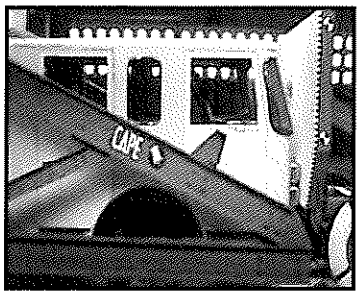
Side Impact: The test cab was subjected to dynamic preload where a 13,275 lb moving barrier was slammed into the side of the cab at 5.5 mph, striking with an impact of 13,000 ft-lbs of energy. This test is not required to meet the ECE 29 standard, but is part of the SAE J2422 test procedure and more closely represents the forces a cab will see in a roll-over incident.



Roof Crush: This same test cab was then subjected to a roof crush force of 22,050 lbs. This value meets the ECE 29 criteria, which must be equivalent to the front axle rating up to a maximum of 10 metric tons.

Additional Roof Crush: The same cab was then loaded with 60,000 lbs, 72000 lbs, 80,000 lbs, and finally 100,000 lbs on the roof, exceeding the ECE test by 4.5 times!

Frontal Impact: The test cab was struck by the 13,275 lb moving barrier at a speed sufficient to impart the required 32,600 ft-lbs of energy.



The cab survived this second blow without compromising the survival space of any occupant area.

Additional Frontal Impact: The same cab was then struck a third time at a higher speed to impart 65,200 ft-lbs of energy into the cab (twice the ECE 29 level of energy).

The cab survived this third blow, again without compromising the survival space of any occupant area.

Pass-Fail criteria of the SAE tests and the ECE 29 test is a measure of whether the "survival space" inside the cab is compromised during any of the test loads. The Pierce cab withstood all integrity tests on the same cab without any measurable intrusion into the survival space of the occupant area.

Witnessed and Certified by:

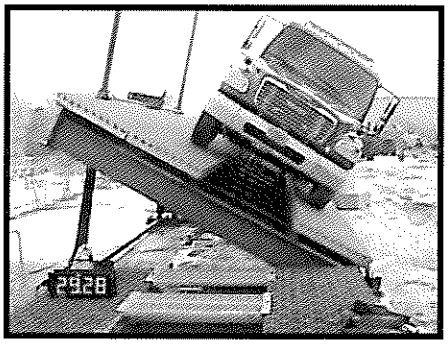
Pierce Manufacturing, Inc.

WISCONSIN
JAMES R. LACKORE
E-26228
APPLETON, WI
PROFESSIONAL ENGINEER

James Roger Lackore, PE
October 16, 2003

Certification Document CD0089
Statement of Compliance to NFPA 1901-2009
Vehicle Stability

Pierce fire apparatus comply with NFPA 1901 Section 4.13 Vehicle Stability using the tilt table method. As prescribed by the standard, each apparatus is compared to a substantially similar apparatus that has been loaded as required and tested on a tilt table per the SAE J2180 test procedure. If the apparatus configuration was not expected to meet the minimum tilt table criteria, then it will be equipped with the Electronic Stability Control option. A listing of all tested apparatus is maintained by the Research and Development lab and is available for inspection at the Appleton factory.



4.13 Vehicle Stability.

4.13.1* Rollover Stability. The apparatus shall meet the criteria defined in 4.13.1.1, or it shall be equipped with a stability control system in accordance with 4.13.1.2.

4.13.1.1 The apparatus shall meet the criteria defined in either of the following:

(1)*The apparatus shall remain stable to 26.5 degrees in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.

(2) The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

4.13.1.1.1 Compliance shall be certified by testing, calculating, or measuring the apparatus or by comparing the apparatus to a compliant, substantially similar example apparatus, and the certification shall be delivered with the fire apparatus.

4.13.1.1.2 The example apparatus shall be considered substantially similar if it includes a chassis with the same or higher CG height, the same or narrower rear axle track width, the same or greater water tank size and CG height, the same type of front and rear suspension, and the same type and size of aerial device.

4.13.1.1.3 For purposes of 4.13.1.1, the apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb in each seating position, and weight equivalent to the miscellaneous equipment allowance as defined in Table 12.1.2.

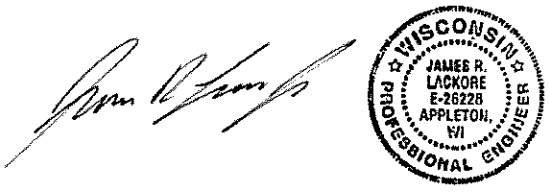
4.13.1.1.3.1 If the apparatus is designed to meet a specified higher equipment loading or larger hose bed capacity or to carry additional ground ladders, these greater loads shall be included in the testing, calculating, or measuring.

4.13.1.1.3.2 The weight added to the fire apparatus for the purpose of test, calculation, or measurement shall be distributed to approximate typical in-service use of the fire apparatus while not exceeding the manufacturer's published individual compartment weight ratings.

4.13.1.2 If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

VALIDATION TEST: Multiple Tests

Pierce Manufacturing, Inc.

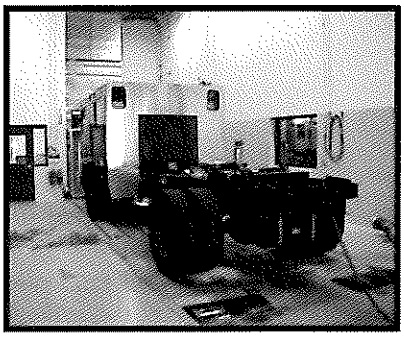


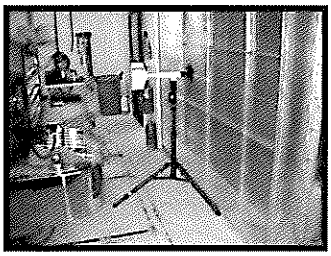
James Roger Lackore, PE
November 18, 2010

Certification Document CD0109
Engine Installation – Arrow XT 2013 Cummins ISX12 Engine

Pierce Manufacturing, Inc. certifies that the 2013 Cummins ISX12 Engine as installed in an Arrow XT chassis meets the engine installation requirements of the engine manufacturer, the NFPA 1901 and NFPA 1906 guidelines as applicable, and Pierce engine design standards.

Validation testing was conducted in the Pierce wind tunnel chassis dynamometer and cooling test laboratory. Test results have been reviewed and accepted by representatives of the engine supplier.





VALIDATION TEST:
RD2163

Pierce Manufacturing, Inc.

David W. Archer
Vice President of Engineering
May 3, 2013

NPower

January 16, 2013

Mr. Neil Bjornstad
Pierce Manufacturing Inc.
2600 American Drive
Appleton, WI 54913

Dear Neil:

We have reviewed the installation of the Cummins EPA13 ISX12 engine in the Pierce Arrow XT chassis and have found that the engine models listed below are installed in concurrence with our installation recommendations. Please notify us if there are any changes to the installation of these engines. If any changes are made, they must be reviewed and a new statement will be issued regarding concurrence.

Engine Models Reviewed: ISX12 500
ISX12 450
ISX12 400

Please let me know if you need any additional information.

Sincerely,

Michael Bartkowski
OEM Account Manager

cc: Lisa Barwick, Jon Stege

Cummins NPower LLC
800 W. Ryan Road
Oak Creek, WI 53154
Phone 414 768 7400
www.npower.cummins.com

Certification Document CD0006
Arrow XT®
Windshield Wiper System

Pierce Manufacturing certifies the integrity of the Arrow XT® Windshield Wiper System.

Specimens representing the configuration of the Arrow XT® windshield wipers have been successfully tested to meet the following objectives:

OBJECTIVES:

- Complete 3,000,000 cycles of windshield wiper operation per SAE J198 § 6.2
- Inspect wiper motor, pivots, linkages, and mounts frequently to validate cumulative wiper system integrity.

CONCLUSIONS:

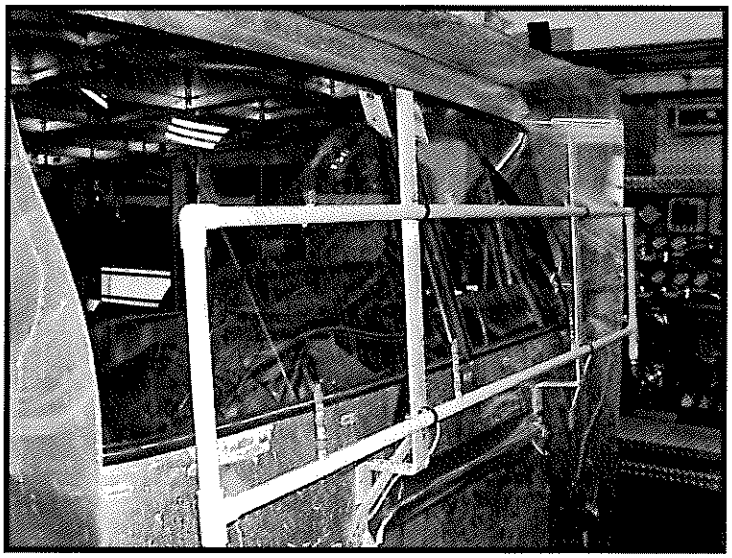
- The entire wiper system successfully met the goal of 3,000,000 cycles. The wiper motors and arms did not exhibit signs of unusual wear or damage.

VALIDATION TEST: RD0945

Pierce Manufacturing, Inc.

WISCONSIN JAMES R. LACKORE E-26228 APPLETON, WI PROFESSIONAL ENGINEER

James Roger Lackore, PE
March 16, 2008



PIERCE MANUFACTURING INC.®

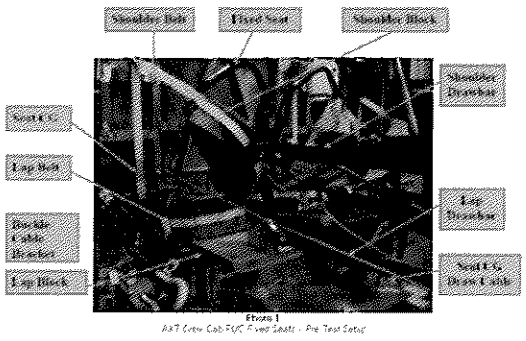
AN OSHKOSH CORPORATION® COMPANY

Certification Document CD0019
Arrow XT®
Seats and Seat Belts

Pierce Manufacturing certifies the conformance of the Arrow XT® cab seats and seat belts to Federal Motor Vehicle Safety Standards. Representative Arrow XT® Seat and Seat Belt designs have been tested successfully in accordance with FMVSS 207.

Physical testing was performed to qualify passenger seats to meet Federal Motor Vehicle Safety Standards (FMVSS) 207 and 210. This requires that a minimum of 3,000 lbf be applied to both the lap and shoulder belts via appropriate body blocks. A third force of twenty times the mass of the seat must be applied at the center-of-gravity (CG) of the seat. All three forces are applied at the same time, reached within thirty seconds of the start of the test, and be held for a minimum of ten seconds.

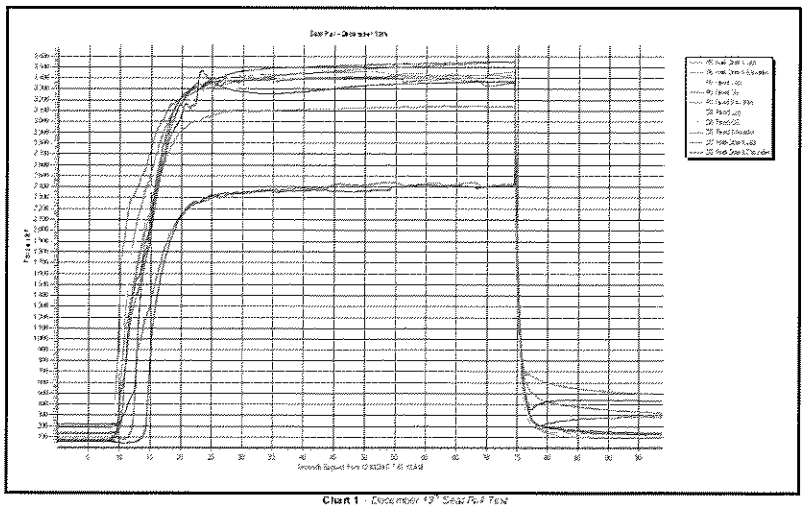
A force equal to twenty times the mass of the seat was applied to each seat in the direction opposite to the combination pull. A moment of 275 lb-ft was applied to the seat with reference to the H-point.



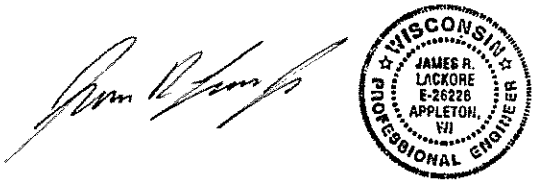
This testing ensures that the seat mounting and seat belt anchors are adequate to retain the seats and occupants in a crash. The Federal requirements are based on the high deceleration rates of passenger vehicles, so the design requirements are significantly more conservative considering the slower crash speeds of heavy trucks.

VALIDATION TESTS:

RD1327
RD0862
RD1428



Pierce Manufacturing, Inc.



James Roger Lackore, PE
June 17, 2008

Electrical Analysis

2/14/2014

Bid #: 662

Sales Rep: Baker, John

Desc: ARROW XT - 105 HDL - NO TANK AND PUMP

Organization: Finley Fire Equipment Co, Inc

Option	Description	Type*	Minimum Load	Intermittent Load	Total Connected
0001244	High Idle w/Electronic Engine, Custom		0.00	1.20	0.00
0002526	Light, Engine Compt, All Custom Chassis		0.00	1.60	0.00
0002617	PTO switch, w/light - aerial		0.00	0.00	0.08
0006066	Control, Air Horn, DS & PS Lanyard		0.00	0.83	0.00
0006825	Reel, Elect Cable, Hannay, 1600, (3) Wire		0.00	72.00	0.00
0018999	Lights, Door Interior Flash, 4 Dr Cab, Whelen 50*00F*R LED		0.00	0.00	0.38
0030889	Retarder, Telma Inline-Driveline, w/Jacobs Engine Brake, Tandem		0.00	224.42	0.00
0032602	Speedometer, Class 1 w/LED, Officer overhead		0.00	0.00	0.16
0033682	Compt w/No Pump, 60" Wide w/Rollup Door		0.00	0.00	3.60
0039214	Lights, Backup, Whelen 600, LED for Whelen Cast 3 & 4 housing		0.00	1.00	0.00
0043079	Heater/defroster, AXT		0.00	0.00	12.10
0056259	Batteries, (5) Delphi Grp 31, 950 CCA each, Iso Bat, SAE Post		0.00	3.00	0.00
0062672	Collision Avoidance, Align For Stowing, PAL/HAL		0.00	0.12	0.04
0120787	Control Stations, PAL (Four Stabilizers)		0.00	0.00	4.26
0539193	Siren, Federal Q2B, Activated Only w/E-Master Switch		0.00	100.00	0.00
0543751	Light, Do Not Move Apparatus		0.00	2.00	0.00
0544340	Portable Hand Light, Provided by Fire Department, Aerial NFPA		0.00	0.50	0.00
0544516	Spotlight, Handheld Cab, Specialty Lighting 2150-1		0.00	7.81	0.00
0552777	Fuel Pump for Repriming		0.00	6.00	0.00
0562665	Cab Lift, Elec/Hyd, 2010 AXT, w/Manual Override		0.00	180.00	0.00
0565451	Air Conditioning, Arrow-XT 2010, Center Mount, Aerial		0.00	0.00	80.20
0582627	Intercom, 3-Way Fire Research ICA900 Hands Free		0.00	0.00	0.50
0589768	Light, Whelen, 12V PFP1 Pioneer LED FloodIt, PBA103 Recessed 15		0.00	0.00	12.00
589905	Alarm, Back-up Warning, PRECO 1040		0.00	0.50	0.00
0590057	Light, Visor, Whelen, 12V PFP1 Pioneer LED, FloodIt, Deep Notch		0.00	0.00	12.00
0593759	ESC/ABS/ATC Wabco Brake System, Tandem Rear Axle, 2010		0.00	6.00	0.00
0653677	Lighting, Rung, LED, TecNiq, 4 Section, Base, Lower/Upper Mid, Fly		0.00	0.00	20.00
0653937	Flasher, Headlight Alternating		0.00	0.00	0.08
0655135	Lights, Compt, Amdor AY-9220 LED, Strip LED Additional, Horizontal,		0.00	0.00	1.76
0679349	Camera, Safety Vision, 7" LCD Display, Rear Camera Only		0.00	1.20	0.00
0692052	Light, FRC, 12V SPA260-Q15 LED, Surface Mount 1st		0.00	0.00	26.00
0693088	Speaker(s), Motorola, Model HSN4031A		0.00	0.00	0.00
0548004	Wiring, Spare, 15 A 12V DC 1st	LM	0.00	0.00	45.00
0644262	Wiring, Spare, 160 A 12V DC, 60A Bat, 40A Sw Bat, 60A Ign, Grnd	LM	0.00	0.00	320.00
0002565	Hourmeter, Aerial Inside Cab	NFPA	0.10	0.00	0.00
0002615	Switch, Aerial 12V Master	NFPA	0.08	0.00	0.00
0002758	Amp Draw, NFPA Radio Allowance	NFPA	5.00	0.00	0.00
0002762	Load Manager, Kussmaul Mark I, (7) Channels	NFPA	0.56	0.56	0.00
0005925	Light, Open Door - Custom Std	NFPA	2.70	0.00	0.00
0006973	Flowminder, Class 1, Waterway (PAL)	NFPA	0.50	0.00	0.00
0006975	Lights, Collins FX-12 (PAL), 4lts	NFPA	31.20	0.00	0.00
0012630	Wiper Control, 2-Speed with Intermittent, DLX/Enf/AXT	NFPA	1.70	6.80	0.00
0018484	Lights, Deck, Hella (2) 74505	NFPA	9.28	0.00	0.00
0023672	Compt, IPO Stairs, Not Required, DS	NFPA	0.90	0.00	0.90
0051716	Cab Lighting, LED, AXT	NFPA	5.93	7.86	0.00
0057905	Lightbar, Whelen, Freedom 2-FNMINI, 24" LED, 1-R, 1-W, 2-RC	NFPA	4.00	1.00	0.00
0063695	Compt, DS F/H F/D, Roll Drs, w/o Chute, 105 HDL, 85 PAP, 100 HAL	NFPA	2.70	0.00	2.70
0063727	Compt, DS Turntable, F/H F/D, Roll Dr & Lift Dr, 105 HDL, 85 PAP	NFPA	1.80	0.00	1.80
0063734	Compt, PS Turntable, F/H F/D, Roll Dr & Lift Dr, 105 HDL, 85 PAP	NFPA	1.80	0.00	1.80
0063735	Compt, PS F/H F/D, Roll Drs, w/o Chute, 105 HDL, 85 PAP, 100 HAL	NFPA	2.70	0.00	2.70
068701	Lights, Grote Supernova LED, Stabilizer Beam, (2) Sets	NFPA	3.20	0.00	0.00
0076753	Lights, Side Zone Lower, Whelen Super 600 LED, Over 25 Foot Gap,	NFPA	3.65	5.47	0.00

* UDMC = User Defined Mission Critical, LM = User Defined Load Managed, S = Electrical Amperage Supply

Electrical Analysis

2/14/2014

Bid #: 662

Sales Rep: Baker, John

Desc: ARROW XT - 105 HDL - NO TANK AND PUMP

Organization: Finley Fire Equipment Co, Inc

Option	Description	Type*	Minimum Load	Intermittent Load	Total Connected
0076814	Lights, Rear Zone Lower, Whelen Super 600 LED, For 3 or 4 Bezel	NFPA	2.80	0.00	0.00
0077011	Light, Front Zone, Whelen Super 600 LED, 2pr, Q Bezel,	NFPA	0.20	0.00	1.80
0077496	Lights, Stabilizer Warn, (2) Sets, Whelen Super 600 Flashing LED	NFPA	1.00	0.00	0.00
0088745	Light, Rear Zone Upper, Whelen L31HRFN LED Beacon, Red LED	NFPA	4.00	0.00	0.00
0094673	Generator, Harrison 10kW MPC Hydraulic, Hotshift PTO	NFPA	20.71	0.00	0.00
0509656	Lights, Cab and Crew Cab Access Steps, P25, LED w/Bezel, 2 Lights	NFPA	1.00	0.00	1.00
0511569	Lights, Identification/Clearance, Rear, P25, LED	NFPA	0.50	0.00	0.00
0521285	Light, Directional/Marker, Intermediate Light, Truck-Lite Model 60115Y	NFPA	0.25	0.25	0.00
0545689	Lights, Perimeter Scene, Amdor LumaBar H2O, AY-9500-020, 20"	NFPA	0.24	0.00	0.00
0551962	Lights, Dome CC, (2) Weldon, 8080-7000-13 LED, Red/Clear, Blk	NFPA	0.40	0.40	0.00
0554004	Lights, Step (6), P25 LED, Swing Down Access Steps, Each Side	NFPA	0.30	0.00	0.00
0561487	Light, Traffic Directing, Whelen TACF85 45" Long LED	NFPA	2.80	0.00	0.00
0562568	Cab, Arrow-XT 2010, 6710 Raised Roof w/ Deep Notch Aerial	NFPA	6.80	10.20	0.00
0567650	Cab Instruments, Blk Gags, Blk Bez, AXT 2010	NFPA	1.26	0.00	0.00
0568012	Air Dryer, Wabco System Saver 1200, 2010	NFPA	7.81	0.00	0.00
0595087	DEF Tank, 4.5 Gallon, DS Fill, Forward of Rear Axle, DD13, ISL9, ISX	NFPA	0.60	11.40	0.00
0634343	Cabinet, EMS, Rear Facing, DS, 22 W x 42.5 H x 26 D, Roll Ext Acc	NFPA	1.50	0.00	1.50
0642579	Trans, Allison 5th Gen, 4000 EVS P, With Prognostics	NFPA	2.00	2.00	0.00
0650675	Lights, Tail, Whelen 60BTT* Red LED Stop/Tail & 60A00TAR Amb	NFPA	0.50	1.50	0.00
0659635	Bracket, License Plate & Light, P25 LED, Stainless Brkt	NFPA	0.07	0.00	0.00
0661624	Lights, Perimeter Scene, (2) Amdor Lumabar H2O, AY-9500-020	NFPA	0.48	0.00	0.00
0666446	Lights, Perimeter Scene Cab Exits, Amdor H2O, AY-9500-020 & AY-	NFPA	0.53	0.00	0.00
0666615	Engine, Cummins ISX12, 500 hp, 1645 ft-lb, W/OBD, EPA 2013, AXT	NFPA	10.00	0.00	0.00
0673136	Aerial, 105' Heavy Duty Ladder, (750 dry/500 water)	NFPA	5.00	0.00	0.00
0679316	Lights, Dome, Weldon, Model 8080-7000-13, Officer and Driver Side	NFPA	0.40	0.40	0.00
0566294	Alternator, 430 amp, Niehoff C680-1	S	0.00	0.00	0.00
	Load Totals:		**148.95**	**656.02**	**552.36**

Note: Minimum Continous Load is in "Blocking Right of Way" mode.(Reference current edition of NFPA 1901)
Note: Intermittent Load items are not factored in on any alternator load comparisons. These items are included on the report for reference only and should be looked at as amp draw exclusion items. (Reference current edition of NFPA 1901)
Note: Total Connected Load "Demand" represents Total Connected Load minus any Load Managed items

Alternator Output at Idle: 253.00

Minimum Continuous Load	
Supply:	253.00
Demand:	148.95
Variance:	104.05

Alternator Output at Governed Speed: 365.00

Total Connected Load	
Supply:	365.00
Demand:	336.31
Variance:	28.69

* UDMC = User Defined Mission Critical, LM = User Defined Load Managed, S = Electrical Amperage Supply

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to **www.Energystar.gov**). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

These products use 25 to 50% less energy
Reduced energy costs without compromising quality or performance
Reduced air pollution because fewer fossil fuels are burned
Significant return on investment
Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to **www.Greenseal.org** to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes _____ **No**_____

II. Bid Conditions

A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.

B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.

C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.

D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately or all parts to one vendor.

E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.

F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.

G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.

H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.

I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.

J. All bids mailed must be marked on the face of the envelope:

"Bid on #18-2014 Rear Mounted Ladder Truck"

and addressed to: Division of Central Purchasing
200 East Main Street, Room 338
Lexington, Kentucky 40507

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.

L. A certified check or Bid Bond in the amount of **5%** percent of the bid price must be

attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.

M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.

N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.

O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.

P. All material furnished hereunder must be in full compliance with OSHA regulations.

Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.

R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.

S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;

(3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.

The Act further provides:

KRS 45.610. Hiring minorities - Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

(1) Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and

(2) Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

SPECIAL INSTRUCTIONS TO THE BIDDER

(DO NOT SUBMIT PERFORMANCE SECURITY WITH BID)

Performance Security: The **APPARENT LOW BIDDER** shall furnish, before recommendation by the Division of Central Purchasing to the Urban County Council that the **BIDDER'S** bid be accepted, a **Performance Bond** or **Certified Check,** payable to the Lexington-Fayette Urban County Government, in the penal sum of **100%** of the price of the materials and/or services proposed in the bid.

The performance bond will not be returned to the bidder after delivery of the materials/services specified herein unless the bidder requests that the performance bond be returned.

The certified check will be returned when the materials and/or services specified herein have been delivered.

In the event of bidder's failure to perform as specified herein, it is agreed that the monies represented by the performance bond or certified check shall be retained by the Lexington-Fayette Urban County Government as liquidated damages.

Contracts that are less than $50,000 will not require a 5% bid security or a performance and payment bond.

EQUAL OPPORTUNITY AGREEMENT

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.

- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.

- Section 503 of the Rehabilitation Act of 1973 states:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.

- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

****

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.

Signature _____ Name of Business _____

WORKFORCE ANALYSIS FORM

Name of Organization: _____ Date:_____/_____/_____

Categories	Total	White		Latino		Black		Other		Total	
		M	F	M	F	M	F	M	F	M	F
Administrators											
Professionals											
Superintendents											
Supervisors											
Foremen											
Technicians											
Protective Service											
Para-Professionals											
Office/Clerical											
Skilled Craft											
Service/Maintenance											
Total:											

Prepared by: _____

Name & Title

DIRECTOR, DIVISION OF CENTRAL PURCHASING
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 EAST MAIN STREET
LEXINGTON, KENTUCKY 40507

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITIES AND DBE CONTRACT PARTICIPATION

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this contract be subcontracted to MBE/WBE's. The goal for the utilization of certified MBE/WBE's as subcontractors are recommended goals. Contractors who fail to meet such goals will be expected to provide written explanations to the Director of the Division of Central Purchasing of efforts they have made to accomplish the recommended goals and the extent to which they are successful in accomplishing the recommended goals will be a consideration in the procurement process.

For assistance in locating MBE/WBE Subcontractors contact Marilyn Clark at 859/258-3320 or by writing the address listed below:

Marilyn Clark, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street – Room 338
Lexington, Kentucky 40507

Lexington-Fayette Urban County Government
MBE/WBE Participation Goals

PART 1 - GENERAL

1.1 The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE) and Woman-Owned (WBE) Business Enterprises as subcontractors or suppliers in their bids.

1.2 Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned and Woman-Owned Businesses on this contract.

1.3 **It is therefore a request of each Bidder to include in its bid, the same goal (10%) or for MBE/WBE participation and other requirements as outlined in this section.**

PART 2 - PROCEDURES

2.1 The successful bidder will be required to report to the LFUCG, the dollar amounts of all purchase orders submitted to Minority-Owned or Woman-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)

2.2 Replacement of a Minority-Owned or Woman-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MBE/WBE Firm; this is subject to approval by the LFUCG. (See LFUCG MBE/WBE Substitution Form)

2.3 For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:

A. The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)

2.4 The LFUCG will make every effort to notify interested MBE/WBE subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

PART 3 - DEFINITIONS

3.1 A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned and operated by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.

3.2 A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned and operated by one or more Non-Minority Females.

PART 4 - OBLIGATION OF BIDDER

4.1 **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MBE/WBE subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**

4.2 Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.

4.3 The Form of Proposal includes a section entitled "MBE/WBE Participation Form". The applicable information must be completed and submitted as outlined below.

4.4 **Failure to submit this information as requested may be cause for rejection of bid.**

PART 5 - DOCUMENTATION REQURIED

5.1 Bidders reaching the Goal are required to submit only the "MBE/WBE Participation Form." The form must be fully completed including names and telephone number of participating MBE/WBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.

5.2 Bidders not reaching the Goal must submit the "MBE/WBE Participation Form", the "MBE Quote Summary Form" and a written statement documenting their Good Faith Effort to do so (If bid includes no MBE/WBE participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder may submit the following as proof of Good Faith Efforts to meet the Participation Goal:

A. Advertisement by the bidder of MBE/WBE Contracting opportunities associated with this bid in at least two (2) of the following:

1. A periodical in general circulation throughout the region
2. A Minority-Focused periodical in general circulation throughout the region
3. A Trade periodical aimed at the MBE/WBE community in general circulation throughout the region
4. Bidder shall include copies of dated advertisement with his submittal

B. Evidence of written notice of contracting opportunities to at least five (5) MBE/WBE firms serving the construction industry at least seven (7) days prior to the bid opening date.

C. Copies of quotations submitted by MBE/WBE firms which were not used due to uncompetitive pricing or other factors and/or copies of responses from firms that were contacted indicating that they would not be submitting a bid.

D. Documentation of Bidder's utilization of the agencies identified to help locate potential MBE/WBE firms for inclusion on the contract including responses from agencies.

E. Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement. "Record of MBE/WBE Solicitation" and other required documentation of Good Faith Efforts are to be submitted with the bid, if participation Goal is not met.

MINORITY BUSINESS ENTERPRISE PROGRAM

Marilyn Clark
Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
mclark@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented resolution 167-91—Disadvantaged Business Enterprise (DBE) 10% Goal Plan in July of 1991. The resolution states in part (a full copy is available in Central Purchasing):

> *"A Resolution supporting adoption of the administrative plan for a ten percent (10%) Minimum goal for disadvantaged business enterprise participation in Lexington-Fayette Urban County Government construction and professional services contracts; Providing that as part of their bids on LFUCG construction contracts, general Contractors shall make a good faith effort to award at least ten percent (10%) of All subcontracts to disadvantaged business enterprises; providing that divisions of LFUCG shall make a good faith effort to award at least ten percent of their Professional services and other contracts to disadvantaged business enterprises..."*

A Disadvantaged Business Enterprise is defined as a business at least 51% owned, operated and managed by a U.S. Citizen of the following groups:

- African-American
- Hispanic-American
- Asian/Pacific Islander
- Native American/Native Alaskan
- Non-Minority Female

We are very happy that you have decided to bid for a contract, request for proposal, submitted a quote or are interested in learning more about how to do business with Lexington-Fayette Urban County Government. We have compiled the list below to help you locate certified minority vendors.

LFUCG—Economic Engine Listings
Marilyn Clark
mclark@lexingtonky.gov
859-258-3323

Commerce Lexington—
Tyrone Tyra, Minority Business Development
ttyra@commercelexington.com
859-226-1625

Tri-State Minority Supplier Diversity Council
Sonya Brown
sbrown@tsmsdc.com
502-625-0137

Small Business Development Council
Dee Dee Harbut /UK SBDC
dharbut@uky.edu

Shawn Rogers, UK SBDC
Shawn.rogers@uky.edu

Shiree Mack
smack@uky.edu

Community Ventures Corporation
James Coles
jcoles@cvcky.org
859-231-0054

Kentucky Department of Transportation
Shella Jarvis
Shella.Jarvis@ky.gov
502-564-3601

KPAP
Debbie McKnight
Debbie.McKnight@ky.gov
800-838-3266 or 502-564-4252

Bobbie Carlton
Bobbie.Carlton@ky.gov

Ohio River Valley Women's Business Council
Rea Waldon
rwaldon@gcul.org
513-487-6534

Kentucky Small Business Connect
Tom Back
800-626-2250 or 502-564-2064
https://secure.kentucky.gov//sbc

National Minority Supplier Development Council, Inc. (NMSDC)
www.nmsdc.org

LFUCG MBE/WBE PARTICIPATION FORM
Bid/RFP/Quote Reference #_____

The MBE/WBE subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately.

MBE/WBE Company, Name, Address, Phone, Email	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.			
2.			
3.			
4.			

The undersigned company representative submits the above list of MBE/WBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company	**By**
Date	**Title**

LFUCG MBE/WBE SUBSTITUTION FORM
Bid/RFP/Quote Reference #_____

The substituted MBE/WBE subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MBE/WBE Company Name, Address, Phone, Email	MBE/WBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company **Date**

Company Representative **Title**

MBE QUOTE SUMMARY FORM

Bid/RFP/Quote Reference #_____

The undersigned acknowledges that the minority subcontractors listed on this form did submit a quote to participate on this project.

Company Name	Contact Person
Address/Phone/Email	Bid Package / Bid Date

MBE/WBE Company Address	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communicatio (email, phone meeting, ad, event etc)	Total dollars $$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

_____ Company

_____ Company Representative

_____ Date

_____ Title

LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MBE/WBE vendors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote #_____

Total Contract Amount Awarded to Prime Contractor for this Project_____

Project Name/ Contract #	Work Period/ From: To:
Company Name:	Address:
Federal Tax ID:	Contact Person:

Subcontractor Vendor ID (name, address, phone, email	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

LFUCG STATEMENT OF GOOD FAITH EFFORTS

Bid/RFP/Quote #_____

By the signature below of an authorized company representative, we certify that we have utilized the following methods to obtain the maximum practicable participation by minority and women owned business enterprises on the project. Please indicate which methods you used by placing an X in the appropriate place.

____ Attended LFUCG Central Purchasing Economic Inclusion Outreach Event

____ Sponsored Economic Inclusion event to provide networking opportunities

____ Requested a list of MBE/WBE subcontractors or suppliers from LFUCG Economic Engine

____ Advertised for MBE/WBE subcontractors or suppliers in local or regional newspapers

____ Showed evidence of written notice of contracting and/or supplier opportunities to MBE/WBE firms at least seven days prior to the bid opening date

____ Provided copies of quotations submitted by MBE/WBE firms which were not used and/or responses from firms indicating they would not be submitting a quote

____ Provided plans, specifications, and requirements to interested MBE/WBE subcontractors

____ Other
Please list any other methods utilized that aren't covered above.

_____

_____

_____

The undersigned acknowledges that all information is accurate. Any misrepresentations may result termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

_____ _____

Company **Company Representative**

_____ _____

Date **Title**

1-0 INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a complete fire apparatus constructed to withstand the severe and continuous use during firefighting operations. These detailed specifications shall cover the requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor. The manufacturer shall provide loose equipment only when specified by the customer. Otherwise, in accordance with the current edition of NFPA 1901 standards, the proposal shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market. **(NO EXCEPTION).**

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts.

Each bid shall be accompanied by a detailed set of Contractor's Proposal consisting of a detailed description of the apparatus and equipment proposed, and to which the apparatus furnished under contract shall conform. This proposal shall indicate size, type, model and make of all component parts and equipment.

1-1 NFPA STANDARDS

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA". These exceptions shall be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

1-2 QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. All equipment furnished shall be guaranteed to be new, of current manufacture and will meet all requirements of these specifications.

Special consideration shall be given to the following points: Accessibility of the various components that require periodic maintenance; ease of operation and symmetrical proportions.

Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under Performance Tests.

Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All welding on apparatus shall meet the standards set forth in NFPA 1901. The manufacturer is required to have an American Welding Society certified welding inspector in the facility during working hours to monitor weld quality.

1-3 PERFORMANCE TESTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

1-4 FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

1-5 DELIVERY and DELIVERY SCHEDULE

The delivery of the apparatus will remain the responsibility of the manufacturer. The apparatus shall be delivered under its own power. Rail or freight delivery is not acceptable. A qualified and responsible representative of the manufacturer will deliver and remain with the apparatus to demonstrate important operational and safety features.

The apparatus shall be delivered to the Lexington Fire Department within 240 days of the issue date of the Purchase Order or the bidder shall be penalized $500 per day for each day over the number of specified days in the bid the apparatus is not delivered.

1-6 INFORMATION REQUIRED

The manufacturer will supply at time of delivery, two (2) complete operation and maintenance manuals covering the completed apparatus as delivered and accepted. The manuals will contain the following:

- Descriptions, specifications and ratings of chassis and aerial device.
- "As built" wiring diagrams
- Lubrication charts.
- Operating instructions for the chassis and any major components including auxiliary systems.

- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

1-7 INFORMATION REQUIRED (ELECTRONIC FORMAT)

The manufacturer will supply at time of delivery, two (2) electronic sets of operation and maintenance manuals covering the completed apparatus as delivered and accepted. The manuals will contain the following:

- Descriptions, specifications and ratings of chassis and aerial device.
- "As built" wiring diagrams
- Lubrication charts.
- Operating instructions for the chassis and any major components including auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

1-8 APPARATUS AND RELATED COMPONENT TRAINING

Training shall be provided by the manufacturer for three consecutive days at a designated time and location determined by the fire department on the operation of the apparatus and associated components. Target audience to include service and operational personnel. A power point or video shall accompany the apparatus for training at the time of delivery.

1-9 MANUFACTURER SPONSORED TRAINING

The manufacturer will provide to the Lexington KY Division of Fire's Mechanical Bureau, factory level or equivalent repair and or maintenance related training on fire apparatus and or apparatus components within one year of delivery. This training will be the equivalent of four days for 2 persons.

All expenses associated with providing this training including registration, travel, lodging, meals course materials, etc. shall be the sole responsibility of the manufacturer.

1-10 VEHICLE FLUIDS PLATE

A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, aerial hydraulics, generator hydraulics, drive axle, air conditioning refrigerant, air conditioning lubrication oil, power steering fluid, cab tilt mechanism fluid, air compressor system lubricant, and front/rear tire pressures.

1-11 LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

1-12 EXCEPTIONS TO SPECIFICATION REQUIREMENTS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

Bidders shall include document entitled "EXCEPTIONS TO SPECIFICATIONS" that will reference the page number and subheading for ALL exceptions to these specifications. Exceptions will be allowed if they are equal to, or superior to that specified and provided they are listed and fully explained. The decision as to whether any exception is approved as being equivalent shall be entirely that of the Chief of the Division of Fire.

PROPOSALS TAKING TOTAL EXCEPTION TO THESE SPECIFICATIONS SHALL NOT BE ACCEPTABLE.

Bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. **An exception to this requirement shall not be tolerated.**

Any bid indicating that the manufacturer's proposal shall supersede these specifications will be immediately rejected.

1-13 GENERAL CONSTRUCTION

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

1-14 SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab, body and aerial device being engineered and designed by the bidder. The warranties relative to the chassis, body and aerial design (excluding component warranties such as engine, transmission, axles, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, chassis and aerial). The bidder shall provide evidence that they comply with this requirement.

1-15 RISK MANAGEMENT PROVISIONS; INSURANCE AND INDEMNIFICATION

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Vendor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Vendor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "Vendor") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) Vendor shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by Vendor's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the Vendor; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) In the event LFUCG is alleged to be liable based upon the above, Vendor shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

FINANCIAL RESPONSIBILITY

BIDDER/VENDOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AAND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

Vendor shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the provision of equipment or goods or the performance of the work or services hereunder by Vendor. The cost of such insurance shall be included in any bid:

SPECIFICATION BID REQUIREMENTS

Bidders shall also indicate in the "yes/no" column if their bid complies **on each item** (PARAGRAPH) specified. Exceptions shall be listed and fully explained on a separate page. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. The decision as to whether any exception is approved as being equivalent shall be entirely that of the Chief of the Division of Fire.

Proposals taking total exception to specifications shall not be acceptable.

Also, bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. **An exception to these requirements shall not be acceptable.**
Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specifications will be immediately rejected

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Products/Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include owner as an additional insured when required by written contract.

The policy shall include owner as an additional insured as their interest may appear.

The required limits can be provided by one or more policies provided all other insurance requirements are met.

A carrier(s) rated "Excellent" by A.M. Bests shall provide coverage

COMMERCIAL AUTOMOBILE INSURANCE

The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile insurance:

Combined Single Limit: $1,000,000

Coverage shall be written on a Commercial Automobile form.

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate: $25,000,000
Each Occurrence: $25,000,000

The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverage's listed above along with its bid. The certificate shall be made out to the purchaser and be an original, no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewal or material change in coverage.

1-16 BID BOND

All bidders shall provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.

1-17 PERFORMANCE BOND, 1 YEAR

The successful bidder shall furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond shall be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of

XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Basic One (1) Year Limited Warranty period included within this proposal. Owner agrees that the penal amount of this bond shall be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type shall not exceed one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

1-18 ISO COMPLIANCE

The manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

1-19 INSPECTION CERTIFICATE Aerial Device

A third party inspection certificate for the aerial device shall be furnished upon delivery of the aerial device. The certificate shall be Underwriters Laboratories Inc. Type 1 and shall indicate that the aerial device has been inspected on the production line and after final assembly.

The following tests shall be conducted:

- Magnetic particle inspection shall be conducted on every structural weld to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets shall be placed on each side of the weld while iron powder is placed on the weld itself. The powder shall detect any crack that may exist. This test shall conform to ASTM E709 and be performed prior to assembly of the aerial device.

- With aluminum structural components, visual inspection shall be performed on aluminum surfaces (non-magnetic). A liquid penetrant test shall be performed on any suspected defective area. This test shall conform to ASTM E165 and be performed prior to assembly of the aerial device.

- Ultrasonic inspection shall be used to detect any flaws in pins, bolts and other critical mounting components.

Functional tests, load tests, stability tests, and visual structural examinations shall be performed. These tests shall determine any unusual deflection, noise, vibration, or instability characteristics of the unit. **(NO EXCEPTION)**

1-20 VEHICLE INSPECTION PROGRAM CERTIFICATION

The apparatus shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901 standards. The certification includes: all design, production, operational and performance testing of the apparatus. **(NO EXCEPTION)**

1-21 GENERATOR TEST

If the unit has a generator, the generator shall be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results shall be provided to the Fire Department at the time of delivery.

1-22 APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

1-23 PRE-CONSTRUCTION AND INSPECTION TRIPS

The bidder shall provide three (3) factory inspection trips for four (4) customer representatives. The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer, typically pre-construction, post paint and final inspection. All costs such as travel, lodging and meals shall be the responsibility of the bidder. Transportation is to be commercial air from Lexington, Kentucky to the nearest commercial airport and ground transportation from the time of arrival until departure.

2-0 CHASSIS

The chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility, eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

2-1 MAXIMUM OVERALL HEIGHT

The maximum overall height of the apparatus shall be 11' – 4".

2-2 WHEELBASE

The wheelbase of the vehicle shall be no greater than 248.50 inches.

2-3 GVW RATING

The gross vehicle weight rating shall be a minimum of 74,800 pounds.

2-4 FRAME

The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails shall be constructed of 120,000 psi yield strength heat-treated .38" thick steel, with 3.50" wide flanges.

2-5 FRAME REINFORCEMENT

In addition, a mainframe inverted "L" liner shall be provided. It shall be heat-treated steel measuring 12.00" x 3.00" x .25". Each liner shall have a section modulus of 7.795 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center shall be 3,976,502 pounds per rail.

The frame liner shall be mounted inside of the chassis frame rail and extend the full length of the frame.

2-6 CORROSION PROTECTION

There shall be a system to prevent corrosion of all underbody components. The builder shall provide a detailed description of the corrosion protection process.

2-7 FRONT NON DRIVE AXLE

The front axle shall be a Meritor (Rockwell). It shall be equipped with oil seals and transparent cover for oil level inspection. It shall be the responsibility of the builder to propose the specific model and weight rating to accommodate the front axle load as built. The builder shall provide detailed description in the proposal as to the weight rating and model number of the axle.

2-8 FRONT SUSPENSION

The front suspension shall be parabolic (taper leaf) spring type, rated to accommodate the front axle load as built. The builder shall provide detailed description as to the construction, weight rating, and details of the front suspension.

Axle stops with energy absorbing jounce bumpers shall be supplied on the spring top pad.

2-9 SHOCK ABSORBERS

Heavy-duty telescoping shock absorbers (KONI) shall be provided on the front suspension.

2-10 OIL SEALS

Oil seals with viewing window shall be provided on the front axle.

2-11 FRONT TIRES

Front tires shall be Michelin radials sized for the front axle load with all position XZY tread.

The tires shall be mounted on Alcoa polished aluminum disc-type wheels.

2-12 REAR AXLE

The rear axle shall be a Meritor™, Model RT-52-185, tandem axle assembly with a capacity of 54,000 pounds.

Axles shall have a gear reduction

A driver controlled inter-axle lock for RT series axles, with indicator light shall be located within easy reach of the driver. Oil seals shall be provided.

2-13 TOP SPEED OF VEHICLE

A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 60 MPH.

2-14 REAR SUSPENSION

Rear suspension shall be a Hendrickson FIREMAXX EX rated to accommodate the rear axle load as built.

2-15 OIL SEALS

Oil seals shall be provided on the rear axle.

2-16 REAR TIRES

Rear tires shall be eight (8) Michelin radials sized for the rear axle load with XZT-2 all position tread.

The tires shall be mounted on Alcoa polished aluminum disc wheels with a ten (10)-stud 11.25" bolt circle.

2-17 TIRE BALANCE

All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.

2-18 TIRE PRESSURE MANAGEMENT

There shall be a VECSAFE LED tire alert pressure management system provided that shall monitor each tire's pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of 10 tires.

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

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

2-19 HUB COVERS (front)

Stainless steel hub covers shall be provided on the front axle. An oil level viewing window shall be provided.

2-20 HUB COVERS (Rear)

A pair of stainless steel, high hat, hub covers shall be provided on the rear axle hubs.

2-21 COVERS, LUG NUT, CHROME

Chrome lug nut covers shall be supplied on front and rear wheels.

2-22 MUD FLAPS

Mud flaps shall be installed behind the front and rear wheels of the apparatus.

2-23 WHEEL CHOCKS

There shall be TWO (2) pair of folding Ziamatic SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.

2-24 WHEEL CHOCK BRACKETS

There shall be TWO (2) pair of Ziamatic SQCH-44-H horizontal mounting wheel chock brackets provided for the Ziamatic SAC-44-E folding wheel chocks. The brackets shall be located at pre-construction conference.

2-25 ELECTRONIC STABILITY CONTROL

A vehicle control system shall be provided as an integral part of the ABS brake system from Meritor Wabco.

The system shall monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system shall automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system shall monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system shall selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.

2-26 ANTI-LOCK BRAKE SYSTEM

The vehicle shall be equipped with a Wabco 6S6M, anti-lock braking system. The ABS shall provide a six (6) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

2-27 AUTOMATIC TRACTION CONTROL

An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. A "mud/snow" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

2-28 ELECTRONIC STABILITY CONTROL SYSTEM, ANTI-LOCK BRAKE SYSTEM & AUTOMATIC TRACTION CONTROL WARRANTY

The Wabco ABS/ATC system shall come with a **three (3) year or 300,000 mile parts and labor** warranty provided by Meritor Wabco Vehicle Control Systems.

2-29 BRAKES

The service brake system shall be full air type.

The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system shall be certified, third party inspected, for improved stopping distance.

The rear brakes shall be Meritor™ 16.50" x 7.00" cam operated with automatic slack adjusters. Brake drums shall be of outboard type.

2-30 AIR COMPRESSOR, BRAKE SYSTEM

The air compressor shall be a Cummins/Wabco with 18.7 cubic feet per minute output.

2-31 BRAKE SYSTEM

The brake system shall include:

- Bendix Westinghouse dual brake treadle valve with vinyl covered foot surface

- Heated automatic moisture ejector on air dryer

- Total air system capacity a minimum of 6,600 cubic inches

- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi

- MGM spring set parking brake system

- Parking brake operated by a Bendix-Westinghouse PP-1 control valve

- A parking "brake on" indicator light on instrument panel

- Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall be provided with an automatic spring brake application at 40 psi

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tanks shall be mounted with stainless steel brackets. **(No exception).**

- Wabco System Saver 1200 air dryer with spin-on coalescing filter cartridge

- 100 Watt Heater

2-32 BRAKE LINES

Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Threaded connections shall be used for all brake lines. Push on style connectors are not acceptable.

2-33 AIR INLET

One (1) air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver's side lower step well of the cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

2-34 AIR OUTLET

One (1) air outlet shall be installed with a female coupling and shut off valve, located in the driver's side lower step well of the cab. This system shall tie into the additional tank of the brake system and include an 85-psi pressure protection valve in the outlet line to prevent the brake system from losing all air.

A mating male fitting shall be provided with the loose equipment.

2-35 ALL WHEEL LOCK-UP

An additional all wheel lock-up system shall be installed which applies air to the front brakes only. The standard spring brake control valve system shall be used for the rear.

2-36 AIR TANK, ADDITIONAL

An additional air tank with 1,454 cubic inch displacement shall be provided to increase the capacity of the air system. This tank shall be dedicated for air horn use.

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test. To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets. **(No Exceptions.)**

2-37 GUARD, FRONT WHEEL LOCK

A U-bolt type protective guard shall be installed over the "Front Wheel Lock" knob to prevent accidental activation of the brake.

2-38 U-BOLT GUARD OVER PARKING BRAKE KNOB

There shall be one (1) U-bolt type protective guard installed over the "Parking Brake" knob to prevent accidental activation of the brake. The guard shall be located on the driver's side.

2-39 PARK BRAKE CONTROL (additional)

A second park brake control valve shall be installed on the officer side of the instrument panel. This valve shall only activate the brakes if manually pulled out; low air pressure shall not activate this valve. This valve shall be equipped with a U-bolt type protective guard as specified in section 2-38.

2-40 ENGINE

The chassis shall be powered by an electronically controlled engine as described below:

2-40-1 Engine shall be a Cummins, 2010 Model ISX15 600, diesel, turbo-charged, per the following specifications.

• Max. Horsepower	600 HP @ 1800 RPM
• Governed Speed	2100 RPM
• Peak Torque	1850 lb. ft. @ 1200 RPM
• Cylinders	Six (6)
• Operating Cycles	Four (4)
• Bore & Stroke	5.39 x 6.35 in.
• Displacement	912 cu. in.
• Compression Ratio	17.2:1
• Governor Type	Limiting Speed
• Drive line Size	1810 Series.

Engine oil filters shall be engine manufacturers branded or approved equal. Engine oil filters shall be accessible for ease of service and replacement.

A fuel/water separator shall be provided.

OPTIONAL ENGINE

The chassis shall be powered by an electronically controlled engine as described below:

2-40-2 Engine shall be a Detroit, 2010 Model DD13, diesel, turbo-charged, per the following:

- Max. Horsepower 500 hp @ 1,800 RPM
- Governed Speed 2,080 RPM
- Peak Torque 1,650 ft-lb @ 1,200 RPM
- Cylinders Six (6)
- Displacement 781 cubic inches (12.8 l)
- Starter: Delco 39MT
- Fuel Filters: Dual cartridge style with check valve, water separator, and water in fuel sensor
- Coolant Filter: Cartridge style with shut off valves on the supply and return lines.

2-41 HIGH IDLE

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle."

2-42 ENGINE BRAKE

A Jacobs's engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting.

The high setting of the brake application shall activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine.

The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system shall automatically disengage the auxiliary braking device, when required.

2-43 DRIVELINE RETARDER

A Telma focal mounted driveline retarder will be provided on the front of the differential.
The retarder will be the electromagnetic type, actuated in four stages.

The first stage of the retarder will be activated whenever the driver's foot is taken off of the accelerator pedal. The second, third and fourth stages will be activated with application of the brake pedal.

A four (4) light, dash mounted indicator will be provided to show retarder activation stages applied.

The Telma retarder model that is suitable for the application, based on vehicle weight and axle ratio, will be provided.

When the Telma retarder is slowing the vehicle the brake lights will be activated.

A master on/off switch will be provided.

The ABS system will automatically disengage the auxiliary braking device when required.

2-44 CLUTCH FAN

A Horton fan clutch shall be provided. It shall engage when the parking brake is set. The fan clutch shall be automatic when the parking brake is released.

2-45 ENGINE AIR INTAKE

An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) shall be mounted at the front of the apparatus, on the passenger side of the engine.

The ember separator shall be mounted in the air intake with flame retardant, roto-molded polyethylene housing. It shall be easily accessible by the hinged access panel at the front of the vehicle.

2-46 EXHAUST SYSTEM

The exhaust system shall include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The exhaust system shall be stainless steel from the turbo to the inlet of the SCR device and shall be 5.00" in diameter. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust shall terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust at the exit. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

2-47 EXHAUST MODIFICATION

The exhaust pipe shall be brought out from under the body at a 90 degree angle from the truck. The tail pipe shall extend a minimum of 2.00" past the body, adaptable for the Plymovent system. The diameter of the pipe shall be 7.00". There shall be a clearance of 4.00" completely around the pipe once past the side of the body. A stop shall be provided on the tail pipe that shall prevent the nozzle from sliding too far on.

2-48 RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum cooling performance, the radiator core shall be made of copper fins having a serpentine design, soldered to brass tubes. The tubes shall be welded to brass headers using the patented "Beta-Weld" process for increased strength, longer road life and solder-bloom corrosion protection. Steel supply and return tanks shall be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator core assembly. The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or

straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The radiator assembly shall include an integral deaeration tank permanently mounted to the top of the radiator framework, with a readily accessible remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

2-49 COOLANT LINES

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.

Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

2-50 FUEL TANK

A 65-gallon fuel tank shall be provided and mounted at rear of chassis. The tank shall be constructed of stainless steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps. **(No Exception).**

A .75" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlets.

The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

Servicing the fuel tank pick-up tubes and fuel gauge sending unit shall be accomplished without draining the fuel and dropping the tank.

All fuel lines shall be provided as recommended by the engine manufacturer.

2-51 DIESEL EXHAUST FLUID TANK

A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted behind the crew cab door on the driver's side. The tank shall be constructed of 16-gauge type 304- L stainless steel.

A .50" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank shall meet the engine manufacturer's requirement for 10 percent expansion space in the event of tank freezing.

The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

2-52 AUXILIARY FUEL PUMP

An auxiliary electric fuel pump shall be added to the fuel line for priming the engine. A switch located on the cab instrument panel shall be provided to operate the pump.

2-53 FUEL SHUTOFF

A fuel line shutoff valve shall be installed on both the inlet and outlet of the primary fuel filter.

2-54 FUEL COOLER

An air to fuel cooler shall be installed in the engine fuel return line.

This cooler shall be of the floating core type to accommodate thermal stresses.

2-55 FUEL SEPARATOR

The engine shall be equipped with a Racor in-line spin-on fuel and water separator in addition to the engine fuel filters.

2-56 TRANSMISSION

An Allison Gen IV, Model EVS 4000P, electronic, torque converting, automatic transmission shall be provided. The transmission shall be programmed with an aggressive downshift to maximize engine braking.

The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due.

Two (2) PTO openings shall be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer shall be installed on the cab instrument panel.

2-57 TRANSMISSION SHIFTER

A six (6)-speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

2-58 TRANSMISSION COOLER

A Modine plate and fin transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. This cooler shall be of the floating core type to accommodate thermal stresses.

2-59 TRANSMISSION FLUID

The transmission shall be provided with TranSynd, Allison approved heavy duty synthetic transmission fluid.

2-60 DRIVELINE

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1810 universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glide coat or equivalent.

2-61 STEERING

Dual Sheppard M110 steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and a TRW model PS hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

The air to oil cooler shall be of the floating core type to accommodate thermal stresses.

A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.

2-62 BUMPER

A one (1) piece, ten (10) gauge, steel bumper, a minimum of 10.00" high, shall be attached to a bolted modular extension frame constructed of 50,000 psi tensile steel "C" channel mounted directly behind it to provide adequate support strength.

The bumper shall be extended 16.00" from front face of cab.

The bumper shall be painted red to match the cab and body

Documentation shall be provided, upon request, to show that the options selected have been engineered for fit-up and approval for this modular bumper extension. A chart shall be provided to indicate the option locations and shall include, but not be limited to, the following options: air horns, mechanical sirens, speakers, winches, and lights.

2-63 LIFT AND TOW MOUNTS

Mounted to the frame extension shall be lift and tow mounts. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes shall be painted the same color as the frame.

2-64 TOW EYES

Two (2) Chicago style tow eyes shall be mounted through the top of the bumper extension. The tow eyes shall be designed and positioned to allow up to a 6,000 lb. straight horizontal pull in line with the centerline of the vehicle. The tow eyes shall not be used for lifting of the apparatus.

The inner and outer edges of the tow eyes shall have a .25" radius.

The tow eyes shall be chrome plated.

2-65 GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face.

The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum tread plate.

3-0 CAB

The cab shall be designed specifically for the low mount, rear mount aerial fire service and shall be manufactured by the chassis builder.

The cab shall be constructed of 5052-H32 aluminum skins on extruded aluminum framing. For increased structural integrity and occupant protection, the cab structure shall include, directly forward of the driver and passenger areas, a .25" firewall plate and .50" lateral support plate that shall tie the forward corner posts to the engine tunnel. The cab roof shall include a heavy one (1)-piece aluminum extrusion with wall thickness up to .12", and shall extend from side to side, and attach to the upper forward corner posts by customized aluminum castings. The cab roof shall be provided with a minimum 58.00" wide notch that lowers the center section of the cab roof by 3.00". The deep notch shall continue from the front of the cab and extend full length to the rear of the cab. The deep notch shall accommodate a low mount aerial device, and provide lower overall vehicle height. The substructure shall include a .38" wall extrusion under the crew cab floor for support while tilting the cab. To provide quality at the source and single source customer support, the cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).

The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The forward cab section shall have an overall height (from the cab roof to the ground) of approximately 102.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 112.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.

The cab shall have an interior width of not less than 95.50". The driver and passenger seating positions shall have a minimum 24.00" clear width at knee level.

To reduce injuries to occupants in the seated positions, proper head clearance shall be provided. The floor-to-ceiling height inside the forward cab shall be no less than 60.25". The floor-to-ceiling height inside the crew cab shall be no less than 50.95" in the center position and 68.75" in the outboard positions.

The crew cab shall measure a minimum of 57.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

3-1 ENGINE TUNNEL

To provide structural strength, the engine tunnel sidewalls shall be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges shall be tapered.

The engine tunnel shall be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel shall be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation shall be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation shall keep noise (DBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

3-2 MDT MOUNT

For the mounting of the computer and slide tray to be added onto the dash in front of the Officer's seat and are to remain low as possible.

3-3 FENDER LINERS

Full-circular, aluminum, inner fender liners in the wheel wells shall be provided.

3-4 WINDSHIELD

A curved safety glass windshield shall be provided with over 2,700 square inches of clear viewing area. Economical windshield replacement glass shall be readily available from local auto glass suppliers. The windshield shall be of two piece design with tinted automotive safety glass.

The windshield shall consist of three (3) layers: the outer light, the middle safety laminate, and the inner light. The .114" thick outer light layer shall provide superior chip resistance. The middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage. The inner light shall provide yet another chip resistant layer.

3-5 SUNVISORS

Two (2) smoked Lexan sunvisors shall be provided. The sunvisors shall be located above the windshield with one (1) mounted on each side of the cab. There shall be a rotating clip on each visor to hold it in place, to keep it from dropping over time.

3-6 WINDSHIELD WIPERS

Dual electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, shall be provided. The windshield washer fluid reservoir shall be accessible for simple maintenance. The wipers shall cover the entire windshield in their glide path and not skip or come off the windshield when in use.

Wipers shall include an intermittent operation feature.

3-7 CAB REAR WALL EXTERIOR COVERING

The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum tread plate except for areas that are not typically visible when the cab is lowered.

3-8 CAB LIFT

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves.

The cab lift controls shall be located at the officer's side front compartment, taking up as little space as possible. The controls shall include a permanently mounted raise/lower switch. The rear of the cab shall be locked down by a two (2)-point, automatic, hydraulic, double hook mechanism that fully engages after the cab has been lowered (self-locking). The dual 2.25" diameter hydraulic cylinders shall be equipped with a fuse that protects the cab from accidentally descending when the cab is in the tilt position.

For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

3-9 INTERLOCK, CAB LIFT TO PARKING BRAKE

The cab lift safety system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

3-10 GRILLE

There shall be a front air intake with a minimum size of 945 square inches of open area for maximum air flow to the charge air cooler and the radiator. A custom made high bright finish stainless steel grille shall be installed over this intake.

3-11 DOOR JAMB SCUFFPLATES

A polished stainless steel trim plate shall be provided rearward of each cab door opening to protect the vertical cab corner rearward of the door opening and on the cab door striker posts to protect the cab paint when exiting and entering the cab

3-12 MOLDING (On Sides of Cab)

Chrome molding shall be provided on both sides of cab.

3-13 MIRRORS

A Retrac Model 613423 dual vision, motorized, west coast style mirror, with chrome finish, shall be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass shall be heated and adjustable with remote control within reach of the driver.

One (1) 8" diameter "eyeball" mirror that is attached to the corner, top of the cab on the passenger's side.

3-14 DOORS

Four (4) side-opening doors shall be provided. The cab doors shall be shortened to the floorboard level, thus leaving an exposed step well area at each cab entrance. The cab doors shall be totally aluminum construction with an extruded aluminum frame and a 3/16" thick aluminum outer door skin.

The forward cab door opening shall be a minimum of 37" wide, and the rear cab door opening shall be a minimum of 31" wide. The rearward cab doors shall have a radius cutout allowing the door opening to protrude forward over the cab wheel well, while providing full access to the rear crew area. Heavy-duty, bright finish cast paddle latches shall be provided on the interior and exterior of each cab door. Door latch mechanisms which utilize spring steel clamps shall not be considered due to their tendency to both rust and break. The interior door latch cables are to be designed to reduce adjustment or possible wear at the adjustment turnbuckles.

Each forward cab and crew cab entry door shall contain a roll-down tempered glass window that fully rolls down all the way.

The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a .38" pin and 11 gauge leaf shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

Four (4) Chevron reflective signs shall be installed on the lowest portion of the inner door panels, one (1) on each door.

The cab steps at each cab door location shall be located below the cab doors and shall be exposed to the exterior of the cab.

3-15 ELECTRIC WINDOW CONTROLS

Each cab entry door shall be equipped with an electrically operated window if offered as a standard package. If not in the standard cab package, the controls for the windows shall be standard hand crank style.

3-16 CAB STEPS

A cab step shall be provided under each cab door, outside of the cab. The step shall be constructed from aluminum with brushed aluminum on the vertical supports. The stepping surface shall be aluminum anti-slip material.

3-17 STIRRUP STEPS WITH GRIP STRUT

A stirrup step shall be provided below each cab and crew cab door. The steps shall be designed with a grip strut tread material providing support, slip resistance, and drainage. The steps shall be a bolt-on design and provide a 19.50" wide x 5.00" deep stepping surface. Each step shall provide a step height of 9.25" from the top of the stirrup step to the first step of the cab.

The stirrup step shall be lit by a white 12 volt DC LED light provided on the step.

The step light shall be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body step lights (section 3-18).

3-18 STEP LIGHTS

There shall be four (4) LED step lights provided. The lights shall be installed at each cab and crew cab door, one (1) per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

The lights shall be activated when the adjacent door is opened.

3-19 FENDER CROWNS

Stainless steel fender crowns shall be installed at the cab wheel openings.

3-20 CREW CAB WINDOWS

One (1) fixed window shall be provided on the passenger side of the cab, to the rear of the front cab door. The window shall be sized to enhance light penetration into the cab interior. There shall be no window provided on the driver side of the cab.

3-21 WINDOW TINT

Crew cab windows shall be provided with increased tint to reduce light transmission.

The windshield and the forward cab door glass shall be provided with standard DOT green automotive tint. The side cab windows to the rear of the front doors, the rear cab door windows and any rear viewing windows shall be equipped with a dark automotive tint.

3-22 STORAGE COMPARTMENT

Provided on each side of the cab, below the cab floor and to the rear of the crew cab access doors, shall be a storage compartment. The compartment shall be transverse with mounting tubes accessible on either side for the storage of pike poles

Each door shall be painted to match the cab. A rubber covered bumper shall be used as a door stop.

3-23 ANTENNA ACCESS PANEL

Removable panels shall be provided in the headliner to allow access to the antenna mounts without removing the headliner. The panels shall be covered to match the headliner. There shall be three (3) access panels provided.

3-24 CAB INTERIOR

The cab shall be a custom tilt style, built specifically for fire service. The cab shall be a cab over engine design, with integral tilt mechanism and engine access from inside the cab.
Cab shall be designed, fabricated, assembled in its entirety, and installed on the frame rails in the manufacturer's factory. This requirement will eliminate any split responsibility in warranty and service.

The cab interior shall be the "Open-Space" design with no wall, window or vertical support posts between the front and rear crew areas to allow direct communication, better visibility and air circulation in the cab.

(1) inch thick acoustical insulation shall be provided on the cab roof and rear and side walls of the cab. This material shall be fitted between the cab structural members and secured with adhesive to provide an insulation barrier for noise and heat.

Premium soundproofing/insulation material shall be installed in the engine enclosure. To ensure a clean, smooth surface, this material shall be retained by flat aluminum panels fastened to studs that are welded to cab as needed. These panels shall be removable. Any gaps in this insulation barrier shall be sealed with 3M #425 aluminized high temperature tape.

A 1" insulation panel shall be installed in each cab door. This insulation panel shall provide an additional acoustical barrier as well as help with heating/cooling properties of the apparatus.

3-25 CAB INTERIOR UPHOLSTERY

The interior of the cab shall be of severe service design with minimal use of upholstery for dash, door panels, headliner, upper engine enclosure and rear interior wall. The cab interior shall be constructed to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The forward overhead panel shall be a fabricated module, which shall have a minimum of four (4), adjustable, windshield defroster/heat vents and four (4) comfort vents.

All interior upholstery panels shall be Black in color. The upholstered cab overhead and side wall portions shall utilize Durawear upholstery with padding underneath to provide additional insulation.

3-26 INTERIOR PAINT (Cab)

The interior metal surfaces of the cab shall be finish painted with black Line-X material.

3-27 CAB FLOOR

The floor of the driver's compartment and the floor of the crew area shall be lined with vinyl composite flooring to comply with NFPA noise and heat requirements.

3-28 CAB DEFROSTER

To provide maximum defrost and heating performance, a 54,961BTU heater-defroster unit with 558 SCFM of air flow shall be provided inside the cab. The defroster unit shall be strategically located under the center forward portion of the roto-molded instrument panel. For easy access, a removable roto-molded cover shall be installed over the defroster unit. The defroster shall include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield. The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance. The defroster shall be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at zero (0) degrees Fahrenheit for ten (10) hours, and a two (2) ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system shall meet or exceed SAE J382 minimum defrosting system performance requirements.

3-29 CAB/CREW CAB HEATER

Two (2) 36,702 BTU auxiliary heaters with 276 SCFM each unit of air flow shall be provided inside the crew cab, one (1) in each rear facing seat riser.

3-30 CAB/CREW AIR CONDITIONING

The air conditioning system shall be capable of cooling the cab from 100 degrees Fahrenheit to 64 degrees Fahrenheit in the forward section of the cab, and 69 degrees Fahrenheit in the rear section of the cab, at 50 percent relative humidity within 30 minutes. The cooling performance test shall be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A roof-mounted condenser with a 63,000 BTU output that meets and exceeds the performance specification shall be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and shall not be acceptable.

The evaporator unit shall be installed in the cab, located in the center of the cab ceiling over the engine tunnel. The evaporator shall include two (2) high performance cores and plenums with multiple outlets, one plenum directed to the front and one plenum directed to the rear of the cab. The A/C shall drain manually without the use of pumps (No Exceptions). Draining condensation into the interior of the cab or onto the occupants, headliner, roof or windshield will not be acceptable under any conditions. A detailed description of how builder proposes to drain A/C condensation is required.

The evaporator unit shall have a 49,000 BTU rating that meets and exceeds the performance specifications. Adjustable air outlets shall be strategically located on the evaporator cover per the following:

Two (2) shall be directed towards the drivers location

Two (2) shall be directed towards the officers location

Six (6) shall be directed towards crew cab area

The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.

The air conditioner shall be controlled by a single integral electronic control panel for the heater, defroster and air conditioner. For ease of operation, the control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature. For added convenience, an optional dual control for the passenger position shall also be available.

3-31 INTERIOR CAB INSULATION

The cab walls, ceiling, and engine tunnel shall be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab shall be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling. Headliners shall be constructed from a 0.20" high density polyethylene corrugated material. Each headliner shall be wrapped with a 0.25" thick foil faced poly damp low emissivity foam insulation barrier for acoustic and thermal control. For ease of installation and removal, all headliners shall be held in place by a dual lock fastening system. Headliner installation requiring removal of mechanical fasteners shall not be acceptable.

Designed for maximum sound absorption and thermal insulation, the rear cab wall shall be insulated with 1.50" thick open cell acoustical foam. The thermal protection of the foam shall provide an R-value of four (4) per 1.00" thickness.

3-32 GRAB HANDLES

A black rubber covered grab handle shall be mounted on the door post of the driver side cab door to assist in entering the cab. The grab handle shall be securely mounted to the post area between the door and windshield.

A long rubber grab handle shall be mounted on the dash board in front of the officer.

3-33 ENGINE COMPARTMENT LIGHT

An engine compartment light shall be installed under the engine hood, of which the switch is an integral part. Light shall have a .125" diameter weep hole in its lens to prevent moisture retention.

3-34 ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil.

The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door.

3-35 CAB SAFETY SYSTEM

The cab shall be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and shall include the following:

A supplemental restraint system (SRS) sensor shall be installed on a structural cab member behind the instrument panel. The SRS sensor shall perform real time diagnostics of all critical subsystems and shall record sensory inputs immediately before and during a side roll or frontal impact event.

A slave SRS sensor shall be installed in the ceiling of the cab to provide capacity for six (6) crew cab seating positions.

A fault-indicating light shall be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.

A driver side front air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the three (3)-point seat belt.

A passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the three (3)-point seat belt.

Air curtains shall be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.

Suspension seats shall be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.

Seat belts shall be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

3-36 FRONTAL IMPACT PROTECTION

The SRS system shall provide protection during a frontal or oblique impact event. The system shall activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis shall have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body

mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor shall activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected. (No exception).

The SRS system shall deploy the following components in the event of a frontal or oblique impact event:

Driver's side front air bag.

Passenger's side knee bolster air bag.

Air curtains mounted in the outboard bolster of outboard seat backs.

Suspension seats shall be retracted to the lowest travel position.

Seat belts shall be pre-tensioned to firmly hold the occupant in place.

3-37 SIDE ROLL PROTECTION

The SRS system shall provide protection during a fast or slow 90-degree roll to the side, in which the vehicle comes to rest on its side. The system shall analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system shall deploy the following components in the event of a side roll:

Air curtains mounted in the outboard bolster of outboard seat backs.

Suspension seats shall be retracted to the lowest travel position.

Seat belts shall be pre-tensioned to firmly hold the occupant in place.

3-38 SEATING CAPACITY

The seating capacity in the cab shall be six (6).

3-39 DRIVER'S SEAT

The driver's seat shall be a H. O. Bostrom Sierra Air-50RX/HD/ABTS LH air suspension, high back bucket seat with Side Curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included. When activated the system shall pretension the seat belt then retract the seat to its lowest travel position.

The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with heavy duty damper and a reclining seat back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with an integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

3-40 OFFICER'S SEAT

The officer's seat shall be a H. O. Bostrom Tanker 450 ABTS RH series fixed base SCBA seat with Side Curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included. When activated the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall include a SCBA storage area with integral headrest.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

3-41 REAR FACING PASSENGER'S SIDE OUTBOARD SEAT

The officer's side outboard rear facing crew seat shall be a H. O. Bostrom Tanker 450 ABTS LH series fixed base SCBA seat.

Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position. A suspension seat safety system shall be included. When activated the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

A seat safety system shall be included. When activated this system shall pretension the seat belt and firmly hold the occupant in the event of a side roll.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.