Prepared for the City of Sparks Fire Department, NV

rosenbauer
Firefighting Technology

Rosenbauer EXT Custom 101’ Cobra Aerial

Graham Fire Apparatus 1552 N. Crestmont Dr. Suite C Meridian, ID 83642 208-869-8618

APPARATUS OVERVIEW

NFPA 2016 STANDARDS

This unit shall comply with the NFPA standards effective January 1, 2016.

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 which states 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, which is qualified to witness and certify test results.

OVERALL HEIGHT

An overall height restriction has not been specified for this apparatus.

MAX LENGTH

The maximum length of the apparatus shall not exceed:

- 47'

OVERALL WIDTH

An overall width restriction has not been specified for this apparatus.

WHEELBASE

A wheelbase restriction has not been specified for this apparatus.

ANGLE OF APPROACH

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

ANGLE OF DEPARTURE

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

ELECTRONIC STABILITY CONTROL

Electronic stability control shall be supplied on the chassis.

NFPA AERIAL/QUINT EQUIPMENT ALLOWANCE

In compliance with NFPA #1901 standards, the apparatus shall be engineered to provide an allow of 2500 pounds of fire department provided loose equipment.

CONTRACT CHANGE NOTICE

The quoted delivery time is based upon our receipt of the specified materials required to produce the apparatus in a timely manner. "Delivery" means the date company is prepared to make physical possession of vehicle available to customer.

The Company shall not be responsible nor deemed to be in default on account of delays in performance due to causes which are beyond the Company's control which make the Company's performance impracticable, including but not limited to civil wars, insurrections, strikes, riots, fires, storms, floods, other acts of nature, explosions, earthquakes, accidents, any act of government, delays in transportation, inability to obtain necessary labor supplies or manufacturing facilities, allocation regulations or orders affecting materials, equipment, facilities or completed products, failure to obtain any required license or certificates, acts of God or the public enemy or terrorism, failure of transportation, epidemics, quarantine restrictions, failure of vendors (due to causes similar to those within the scope of this clause) to perform their contracts or labor troubles causing cessation, slowdown, or interruption of work.

After execution and acceptance of this Purchase Process, the Buyer may request that the Company incorporate a change to the Products or the Specifications for the Products by delivering a Change Order to the Company; provided, however, that any such Change Order must be in writing and include a description of the proposed change sufficient to permit the Company to evaluate the feasibility of such Change Order. Within seven (7) working days of receipt of a Change Order, the Company will inform the Buyer in writing of the feasibility of the Change Order, the earliest possible implementation date for the Change Order, of any increase or decrease in the Purchase Price resulting from such Change Order, and of any effect on production scheduling or delivery resulting from such Change Order. The Company shall not be liable to the Buyer for any delay in performance or delivery arising from any such Change Order. Purchase Price may be modified only by mutual written agreement of the Parties because of changes to the Apparatus required or requested by the Buyer during the construction process pursuant to Appendix C, Change Order Policy. Any changes in the Purchase Price resulting from changes to the Apparatus required or requested by the Buyer during the construction process shall be stated in the Change Order signed by both parties. Additional Changes: If various state or federal regulatory agencies (e.g., NFPA, DOT, EPA) require changes to the specification and/or the product that result in a cost increase to comply therewith this cost will be added to the Purchase Price to be paid by the customer.

APPARATUS CHASSIS SPECIFICATIONS

CAB CUSTOM STYLE

The cab shall be a custom, cab over engine style, with the driver and officer positions ahead of the engine and front axle. The cab shall be specifically designed and manufactured for the fire service industry.

The cab shall be designed by manufacturer's Engineering to meet the unique, Heavy-duty construction specifications. The raw cab will be fabricated to meet the exacting demand of the fire industry and shall be manufactured by a company with no less than 50 years of experience in building custom cabs. All aspects of the cab will be quality checked by manufacturer's personnel. All cab and chassis customization and assembly will take place on the manufacturer's premises.

The cab shall be of a totally enclosed full tilt design, with the interior area completely open to improve visibility and verbal communication between the occupants. The cab shall be capable of tilting 45-degrees, allowing the chassis engine to be removed, if required, without tilting the cab beyond 45-degrees. No Exceptions.

The cab shall include a four (4)-point rubber isolated cab pivot and mounting system. The rear histic mounts shall be isolated from the chassis frame to reduce the transfer of road vibrations and frame torque into the cab, while providing superior handling characteristics. No solid mounted rear lock downs shall be acceptable. No Exceptions.

The front cab pivot assemblies shall be 1/2" A36 steel plate with a .31" thick 2-1/2" diameter tube cross member mechanically attached to the cab and frame. There shall be two (2) greaseable rubber isolated engineered bushings to reduce the transfer of road vibrations into the cab.

The cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The cab super-structure shall be designed with high strength 6061-T6 Aluminum extrusions and 3/16" 5052-H32 Aluminum plate. This shall include the "A", "B", "C" and "D" extruded pillars, triple wall front end reinforced by 3/16" thick x 2"x3" extrusion tubes, 3/16" side walls and rear wall. This shall offer superior occupant protection in the event of vehicle impact.

The extrusions shall provide adequate space for routing of wiring and hoses which will provide service accessibility. Routing of harnessing which requires pulling of wires through tubes will not be allowed. No Exceptions.

The "A" pillar shall be of a closed section, one-piece extrusion extending from the cab header to the bottom of the cab. This design shall ensure strength and superior resistance to buckling in the event of a frontal impact.

The cabs front corners shall be constructed of 5052-H32 stamped Aluminum to provide a consistent material composition. The stamping process alleviates the high tendency of fractures through the fusing of dissimilar metal composition as appears with a casting process.

Cast cab components, including cab corners, "A" pillars and front fascia components shall not be acceptable due to the high tendency of fractures. No Exceptions.

Additional cab strength shall be obtained through closed section, dual extrusions in the construction of the "D" pillars.

The front facade shall be constructed with dual wall .19" thick 5052-H32 Aluminum plates which make up the front bulkhead, reinforced by .19" thick 6061-T6 Aluminum extrusion (box-sections), though-out the inner and outer perimeter of the front end / facade. The reinforcing third wall / barrier is .13" thick 5052-H32 work hardened Aluminum facade panels. All panels shall be welded, no adhesive.

The cab side wall of the cab shall be 3/16" thick 5052-H32 Aluminum plate. The cab side plate shall wrap the corner of the cab b pillar and slam post. The cab rear wall plates shall be reinforced with a minimum of two (2) 3/16 x 3" Aluminum sections; the cab side reinforcements shall be a minimum of 28" apart and span from the cab B pillar and cab C pillar.

The rear wall of the cab shall be 3/16" thick 5052-H32 Aluminum plate. The rear cab plate shall wrap the corner of the cab and attach to the cab D pillar and slam post. The cab rear wall plates shall be reinforced with four horizontal and dual vertical support sections; the dual vertical support structure shall consist of 1/8" thick x 2" 6061-T6 Aluminum tubes and the horizontal hat sections shall consist of 1/8" thick x 4" 5052-H32 Aluminum. The dual vertical support sections shall be 40" a-part, and the cab shall contain a minimum of four (4) 4" hat section horizontal supports.

Additionally, the rear edge of the floor shall include a 3/16" 6061-T6 Aluminum tube extrusion (under the floor) and a 7" 5052-H32 Aluminum cab floor support section (above the floor)

The outside cab width shall measure 99" across. The interior cab shall have a width of 93".

The cab length shall measure 77.3" from the center of the front axle to the front cab skin and 70" from center of the front axle to the back of the cab, for a total cab length of 147.3".

The cab shall also feature ample driver and officer foot room, a total of 3.7 square feet for the driver and 4.45 square feet of floor space at the officer's feet. (No exceptions)

The crew floor shall feature a complete flat floor design, including provisions for a one o'clock PTO inclusion, while still offering an uninterrupted 25 total square feet of space.

The leading edge of the cab floor from the steps shall meet NFPA 15.7.4 slip resistance requirements on both the front and rear cab doors. No Exceptions.

The cab shall meet or exceed cab impact test (SAE J-2420, cab rollover test (SAE J2422), and cab seating requirements (FMVSS 210, and FMVSS 208).

The cab shall include 4 doors. They shall have a front two (2) cab doors shall have a minimum clear opening of 42.5" wide by 81" high measured from the top of the lower cab step to the top of the door opening.; and the rear

two (2) crew doors shall be a minimum clear door opening of 38.5" wide by 89" high measured from the top of the lower cab step to the top of the door opening. The length of the door will vary depending on door type.

ROOF STYLE - 8" RAISED

The cab roof design shall incorporate an angled front roof, transitioning into a rolled extrusion for a swept back design.

The roof height shall feature an 8" raise starting over the driver and officer positions and continuing back to the roof and rear wall joint. Raised roof designs that do not include a raised portion over the driver and officer positions will not be acceptable. No Exceptions.

The roof of the cab shall feature dual .25" thick interlocked structural member extrusions running the entire width of the cab defending against buckling in the event of a rollover.

The cab header shall feature dual 6061-T6 Aluminum extrusions which shall offer superior rigidity and strength.

The raised roof shall offer a crew head height area of 63-1/2" from the floor to the ceiling in the crew areas for optimum headroom.

The crew roof super structure shall include a reinforcement hat-section structure 1/8" thick 5052-H32 Aluminum bracing. The for-aft support braces will be 24" on center apart, the side-to-side support braces will stretch from cab side to cab side and centered between the dual 3/16" extruded and plate reinforced roll-cage section.

The forward cab roof section shall include a combination of 1/8" 6061-T6 extruded tube reinforcements and a hat-section structure 1/8" thick 5052-H32 Aluminum bracing. The bracing shall wrap the entire perimeter of the cab forward roof, and the condenser support structure.

The condenser support structure shall include 1/8" triple sections, supporting the outer perimeter and center of the condenser mounting pad.

Additionally, the entire roof super structure is reinforced by a .25" thick roof edge corner extrusion around the entire cab perimeter.

A drip rail shall be provided along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

DRIP RAIL EXTENSION

The cab shall have a drip rail extension in front of the driver and officer doors. The drip rail shall be connected to the rail along the roof and run midway down the "A" pillar to help prevent water from entering the cab when the front doors are opened. The rail shall be painted to match the cab exterior paint and paint break.

OFFICER SIDE EMS COMPARTMENT

The officer side of the cab shall feature a compartment which is designed for housing emergency medical equipment. The compartment shall be located immediately behind the officer's seat and the interior shall measure 18.5" wide x 26" tall x 23" deep.

- The compartment shall feature an opening on the exterior and/or interior of the cab.
- The compartment shall have a minimum of 6 cubic feet of storage. No Exceptions

911 Seats Inc. and Bostrom seats with Roll Tek are NOT AVAILABLE with EMS compartments.

Please change to Valor seats or remove Roll Tek.

EMS COMPARTMNET LIP

The top of the EMS compartment shall have a 2.0-inch-high aluminum lip around the entire perimeter.

INTERIOR OFFICER EMS COMPARTMENT ACCESS

- The interior Officers EMS compartment shall have an opening of 18.75" W and 22" H. The compartment shall have a sweep out design. Compartment with a lip along the bottom shall be not accepted. No Exceptions.

EMS COMPARTMENT INTERIOR ACCESS

The officer EMS compartment shall feature interior access through a hinged door towards the rear of the cab.

HINGE LOCATION

The officer's interior EMS compartment hinged door shall have the hinge located on the inboard side of the compartment. (Near the Cab Engine Tunnel)

Hinge to be located by the engine tunnel.

COMPARTMENT SHELF

One (1) adjustable shelf shall be installed in the interior cab compartment. The shelf shall be constructed from aluminum.

OFFICER EMS COMPARTMENT INTERIOR FINISH

The interior of the officer side EMS compartment shall have a DA sanded finish.

OFFICER EMS CAB COMPARTMENT LIGHTING

The officer's side EMS compartment shall include one (1) 18" strip of LED lighting and shall be located in the inside front corner of the compartment near the door.

COMMANDER EMS CABINETS - REAR CREW - FORWARD FACING OUTBOARD POSITION.

CAB DOORS

The cab shall include a total of four (4) doors, two (2) forward and two (2) rear crew doors.

The forward cab doors shall be a minimum of 45" wide and have a cab structure opening of 42.5" wide; and the rear crew doors shall be a minimum of 41" wide, and a cab structure opening of 38.5" wide to provide enhanced entry and egress of the cab.

Each cab door shall feature:

- Superior strength and rigidity from 3/16" closed section extruded door frames
- Damping inside each door for a solid feel and minimized reverberation when closed
- A rolled rubber bulb seal style gasket shall be utilized around the door ensuring a weather tight fit
- Integrated, mechanical door stop
- A full length, hidden piano style 10-gauge stainless steel door hinge with a 1/4" pin, which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge
- An integrated one-piece inner door assembly that includes a glass track, mounting provisions for window regulator, door handle and door panel shall be utilized. The inner door assembly shall be easily removed with nut inserts. Self-tapping screws shall not be acceptable.

CAB STEPS

The cab steps shall meet NFPA 13-7.3 in size and slip resistance requirements.

The cab shall incorporate a two-step design at each door, with a first step height of approximately 22" from the ground. The leading edge of the first step shall be 5" further outboard than the second step to provide a staircase design for safer egress.

The front cab first step shall measure a minimum of 33" wide x 10" deep. The front cab intermediate step shall measure a minimum 31" wide x 8" deep.

The crew cab first step shall measure a minimum of 26" wide x 10" deep. The crew cab intermediate step shall measure a minimum 28" wide x 9" deep.

The top crew step shall incorporate an angle approximately midway from the rear wall to the crew door hinge extending out the flooring under the rear facing outer seat positions, offering foot placement for safety while seated in this position.

CAB STEP TRIM

The cab steps shall include a 12-gauge 304 Grip Strut stainless steel construction on the first step, the step closest to the ground. The stainless-steel finish shall be a number 7 mirror. The step shall include a frame which is integral with the construction of the cab for rigidity and strength. The Grip Strut shall allow water and other debris to flow through rather than becoming packed under the step. The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed aluminum tread plate which is 0.084" thick.

BARRIER FREE DOORS

The cab doors shall be "barrier free" style, meaning the door shall be constructed to cover the entry down to the intermediate step, leaving the bottom step open. Each door shall provide approximately 33" of clearance from the ground to the bottom of the door so the door may be opened without stopping due to guard rails along highways.

The lower step well of the cab shall be painted job to match the lower primary color of the cab.

CAB STEP TRIM KICKPLATE

The cab step risers at all doors, the vertical section of all steps, shall include an aluminum tread plate finish.

DOOR HANDLES

The exterior door handles shall be constructed of die-cast steel and chrome plated for a pleasing appearance.

They shall feature a vertically oriented heavy duty pull style handles which are extended out and suitable for easy grasping with a gloved hand.

The interior door handle shall be a paddle style which shall be chrome in color. The paddle shall be hinged towards the rear of the cab.

Each door latch shall feature a military grade aligning dove tail guide striker assembly for precision door closure which prevents sagging throughout the life of the vehicle. No exceptions.

CAB DOOR LOCKS

All cab doors shall include power and manual door locks with keys. The door lock shall include a manual toggle and shall be an integral part of the interior door handle which is red in color. The exterior door lock is integral with the door latch. The cab doors may be unlocked from the exterior with a key or through a thumb turn from inside the cab.

POWER DOOR LOCK OPERATION

Each powered door lock shall be activated by a switch on the Driver and Officer interior front grab handle; which shall control all of the powered cab entry door locks.

POWER DOOR LOCK ACTIVATION

The power entry door locks shall include an electronic door lock system which shall include one (1) external keypad located near the Driver's side front door.

The power door locks shall include two (2) key fobs for activation of the power entry door locks.

INTERIOR CAB DOORS

All cab doors shall consist of a one-piece formed and stamped aluminum interior panel. The panel shall include a formed collar around the interior door latch. The door panels shall be attached to the door with nutserts. ABS material shall not be acceptable. No Exceptions.

INTERIOR CAB DOOR FINISH

All cab doors shall be finished with an Amershield coating for durability. The finish shall be gray in color.

INTERIOR FRONT DOOR PULL

The interior driver and officer cab doors shall each include one (1) customized cast Aluminum single piece door grab pull designed specifically for the fire service.

The single piece door pull shall have a curved designed in an "L" formation to provide multiple points for grasping with a gloved hand. The horizontal dimension shall be a minimum of 28" and the vertical dimension shall be a minimum of 20". The door pulls shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. No Exceptions.

The door pull shall feature secure mounting in three separate locations of the pull utilizing Stainless-steel fasteners with nut inserts in each location. Self-tapping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles.

Each handle shall be constructed of A356 Aluminum casting and shall feature a red powder coated finish.

INTERIOR GRAB HANDLE REAR DOOR

A red powder coated cast Aluminum grab handle shall be provided on the inside of each rear crew door. The handle shall extend horizontally the width of the window just above the windowsill. The handle shall assist with entry and egress from the crew area of the vehicle.

The interior driver and officer rear cab crew doors shall include one (1) customized cast Aluminum single piece door grab pulls designed specifically for the fire service.

The door pull shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. No Exceptions.

The door pull shall feature secure mounting with Stainless-steel fasteners with nut inserts in each location. Self-tapping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles.

Each handle shall be constructed of A356 Aluminum casting and shall feature a red powder coated finish.

WINDSHIELD

A one (1)-piece, safety glass full width windshield with more than 3,228 square inches of area will be provided. No Exceptions.

The windshield shall feature:

- A completely uninterrupted view from both the driver and officer positions
- The windshield will consist of three (3) layers, the outer layer, the middle safety laminate, and the inner layer. The .114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage.
- Economical replacement readily available from auto glass supplier
- Easily removable for replacement using standard automotive techniques
- A frit band will be provided along with an outer trim seal on the outside perimeter of the windshield for a finished automotive appearance.

WINDSHIELD WIPER SYSTEM

A single windshield wiper system shall be incorporated in conformance with FMVSS and SAE requirements.

Two (2) 22" windshield wiper arms shall be mounted below the windshield. Each arm shall include a 26" long wiper to provide optimum windshield clearing.

The windshield wiper fluid reservoir can be filled without raising the cab.

WINDSHIELD WIPER ACTIVATION

The windshield wipers shall be activated through a switch on the driver's panel, with intermittent control.

POWER WINDOW - DRIVER'S DOOR

The driver's door shall include a window which measures a minimum of 23.5" wide x 29" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 681 square inches. The glass shall include a standard automotive tint and through a powered operation shall completely roll into the door housing.

The window shall be trimmed in a black anodized aluminum ring and rubber seal to prevent water from entering the cab when closed.

POWER WINDOW SWITCHES

The Driver shall have switches for each of the cab door windows. The powered windows of the officer door, and each respective crew door, shall be activated by a switch on the respective door.

The switches for the driver and officer door windows shall be located in a customized door grab handle. No Exception

OFFICER WINDOW

The officer's door shall include a window which measures a minimum of 23.5" wide x 29" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 681 square inches. The glass shall include a light gray tint and through a powered operation shall completely roll into the door housing.

The window shall be trimmed in a black anodized aluminum ring and rubber seal to keep water from entering the cab when closed.

REAR DRIVER SIDE WINDOW

The rear driver's side door shall include a window which is 22.5" wide x 27" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 607 square inches. The glass shall include a light gray tint and through power actuation shall roll completely into the door housing. The power window shall be activated through a switch located on the top of the door panel.

REAR OFFICER SIDE WINDOW

The rear officer's side crew door shall include a window measuring 22.5" wide x 27" high, measured from the midpoints left to right and top to bottom. The window shall have a minimum clear viewing area of 607 square inches. The glass shall include a light gray tint and through powered actuation shall roll completely into the door housing. The power window shall be activated through a switch located on the top of the door panel.

DRIVER MIDDLE WINDOW

The cab shall include a fixed driver's side window glass which shall be located between the cab front and rear doors. The fitted glass shall have a clear viewing area of 15.5" wide x 10.5" high and shall include a light gray tint. To eliminate the possibility of corrosion rubber gasket rings shall not be used in the installation of the window, the window shall be glued in.

OFFICER MIDDLE WINDOW

The cab shall include a fixed officer's side window glass which shall be located between the cab front and rear doors. The fitted glass shall have a clear viewing area of 15.5" wide x 10.5" high and shall include a light gray tint. To eliminate the possibility of corrosion rubber gasket rings shall not be used in the installation of the window, the window shall be glued in.

DRIVER REAR CAB WINDOW

The cab shall include a fixed driver's side window which shall be located at the rear of the cab behind the rear doors. The glass shall include a light gray tint. To eliminate the possibility of corrosion rubber gasket rings shall not be used in the installation of the window, the window shall be glued in.

OFFICER REAR CAB WINDOW

The cab shall include a fixed officer's side window which shall be located at the rear of the cab behind the rear doors. The glass shall include a light gray tint. To eliminate the possibility of corrosion rubber gasket rings shall not be used in the installation of the window, the window shall be glued in.

CAB INSULATION

The cab shall be insulated from road and vehicle resonance, exterior sound, and thermal intrusion.
The cab insulation system shall be comprised of three separate components each designed to assure optimal thermal and acoustic properties are achieved. Two layers of insulation material shall be utilized.

A minimum of .8" of SCbond Polyurethane Foam insulation shall be applied as an additional insulation between the cab skin and all interior ceiling surfaces. The insulation shall have a density of 10 lb./ft3 +/-.5 providing better thermal properties and acoustic reduction properties.

A layer of 1/8" barrier bubble film laminated between two layers of reflective metalized film shall be provided in the roof to minimize the effects of radiant heat. The barrier shall be mold and mildew resistant and have a Class A/Class 1 fire rating. The barrier shall have a minimum of a R-5.6 rating. No Exception

The interior cab insulation system shall meet NFPA 1901 14.1.6 standards and ensure that no seated position within the cab exceeds 90dB. This decibel rating shall be measured with the apparatus traveling 45 mph with climate control settings off.

All insulation used in the construction of the cab shall be marine grade featuring longevity and resistance to degradation.

The interior of the cab including the rear wall, side walls and ceiling panels shall be insulated.

Use of open cell material as the primary insulation will not be acceptable. No exceptions.

ENGINE TUNNEL INSULATION

The engine tunnel shall include an insulated barrier from noise on the underside of each tunnel surface. This barrier shall be engineered for surrounding engines.

The insulation barrier shall provide an acceptable decibel level within the cab meeting or exceeding the recommendations of NFPA 1901.

The thickness of the engine tunnel insulation shall be 1" thick. The insulating material shall be open cell polyether-based foam with a textured surface, specifically designed for acoustic absorption.

Use of aluminized faced material on the engine tunnel shall not be acceptable. No exceptions.

The engine tunnel insulation shall be precisely cut and sealed to fit each segment on the underside of the tunnel surface. The insulation shall then be affixed by a pressure sensitive adhesive.

The insulation shall meet or exceed FMVSS 302 flammability testing.

INSULATION FASTENING PINS

The insulation shall be affixed with welded in fastening pins.

CAB UNDERBODY INSULATION

The underside of the cab shall include at a minimum of 1" of a uni-seal Cab-Foam insulation offering reducing vibration noise and thermal effect to the interior of the cab.

INSULATION FASTENING PINS

The insulation shall be affixed with welded in fastening pins.

DAMPING INSULATION

The entire cab, including the ceiling and walls shall include additional insulation reducing structure borne noise from vibration, impact, and resonance within the cab.

INTERIOR TRIM MATERIAL

The interior trim shall feature a 31 oz. marine grade vinyl which features a tensile strength of ASTM D751 of excellent, tear strength meeting the Federal standard 191-5134 of excellent and shall be oil resistant passing the CID-A-A-2950A requirement for no permeation.

Due to the excellent qualities of the marine grade vinyl material, no other type of interior trim shall be acceptable. No Exceptions.

The soft trim vinyl shall feature mildew resistance passing ASTM G21-90 and shall be rated to -25 degrees Fahrenheit.

The vinyl shall be flame retardant meeting California Fire Code 117, UFAC Class 1, and BIFMA Class 1 and shall have a high resistance to abrasion.

The interior of the cab including the ceiling panels shall feature this soft trim and shall be gray in color.

REAR WALL INTERIOR MATERIAL

The rear wall of the cab shall be covered in gray 31 oz. marine grade vinyl for a more pleasing appearance.

THROTTLE AND BRAKE PEDALS

The apparatus shall have suspended throttle and brake pedals.

FLOOR MAT

The interior flooring of the cab shall be covered with an advanced gray multi-layer acoustic dampening mat. The floor matting shall be an open/closed cell, flexible polyurethane polyamide material with frictional dampening and dissipation properties. The mat shall be a fire and skid resistant non-wicking material.

SUN VISORS

The driver and officer seats shall feature a sun visor mounted in the header over each seating position. The sun visors shall be padded and trimmed in black vinyl.

INTERIOR CAB FINISH

The interior cab shall be finished in a high performance Amershield coating including the interior A, B, C and D pillars, all occupant seat frames and any surrounding surfaces extending to the ball seal around each door. This type of coating shall feature:

- Durability, scratch, chemical and abrasion resistance
- Consistent, even coverage and a uniform texture

- Resistance from fading from exposure to UV light
- Gray in color

ENGINE TUNNEL

The distance from the back of the tunnel to the interior wall shall be 56" measured at floor level and 62" at top of engine tunnel. No Exception.

CAB DASH

The cab dash shall offer heavy duty, durable construction using resin transfer molding (RTM) technology formed composite material. The composite material shall be .28" thick for improved resistance and military type strength.

RTM is a low pressure, closed molding process which offers a dimensionally accurate and high-quality surface finish composite molding, using liquid thermoset polymers reinforced with various forms of fiber reinforcements. The matrix selection of polymer and reinforcement dictates molding mechanical and surface finish performance.

ABS polymer construction shall not be acceptable. No Exceptions.

The cab dash shall offer a finish of a polyurethane coating for a rugged design and finish. No Exceptions. The polyurethane finish shall provide a tough, flexible, impact-absorbing, chemical & abrasion-resistant, even-textured, and skid-resistant surface. The polyurethane finish shall offer durability and scratch resistance even against today's advanced firefighting turnout materials with consistent, even coverage and a uniform texture. The polyurethane coating finish shall resist fading from UV light.

This construction shall allow for a clean, seamless dash area that shall reduce unnecessary joining of cab dash components. This design allows for the following features:

- Optimal heating and cooling of cab occupants, HVAC louvers shall be integrated into the gauge panel with a total of six (6) louvers; three louvers pointing at the driver and three louvers pointing at the officer.
- The cab dash instrument cluster shall be installed on a painted panel. This panel shall provide for easy removal to increase serviceability and provide ease of maintenance.
- For improved safety cab switches and controls shall be ergonomically located within easy reach of the driver when in the seated position with seatbelts fastened. This design will reduce driver distraction and increase safety by putting frequently accessed driver controls within easy reach to allow the driver more time to focus on the road.
- The officer side cab dash shall have a painted fire service grade RTM composite fiberglass panel that shall house the three HVAC louvers on the officer side. This panel will also provide ergonomically

located switches and controls for the officer. All controls shall be within easy reach while in the seated position with seatbelts fastened.

- Access panels on the top of the dash for both the driver and officer sides easing maintenance access to controls, components and gauge assemblies
- The driver side dash shall include gauges for primary air pressure, secondary air pressure, a Pacific Insight instrumentation gauge panel and the DEF gauge as standard
- The driver side dash shall also include two (2) lower panels to the left and right of the steering column for FMVSS switches such as the Off/Ignition and start switches and the park brake assembly
- The driver dash shall include a panel for inclusion of an optional Weldon Vista screen and six (6) additional switches or the HVAC controls and additional switching to the right of the Driver
- The officer dash shall include a recessed area for optional mounting cradles or brackets for a laptop computer, mobile data terminal, map compartment or clip board
- The officer dash shall include a panel for inclusion of an optional Weldon Vista screen and or provisions for switches and gauges to the left of the Officer

ENGINE TUNNEL

The engine tunnel shall be constructed of aluminum offering superior durability in addition to thermal and acoustic resistance. Covering the engine tunnel shall be a layer of formed composite material for a contoured transition into the dash and offering a pleasing appearance.

The engine tunnel shall feature:

- A low-profile design measuring approximately 46.5" wide and 21.5" in height from the crew floor shall offer optimum visibility of the windshield and cab interior from any seated position. No Exception.
- The engine tunnel at the driver's position shall be a tapered design, featuring 24" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 26" and the final taper shall start at 21" from floor level and taper inward for a clear width of 33".
- The engine tunnel at the officer's position shall be a tapered design, featuring 23" clear width at floor level, first taper shall start 16.5" from floor level and taper inward for a clear width of 22.5" and the final taper shall start at 21" from floor level and taper inward for a clear width of 31.5".
- The design shall offer a minimum of 30" for the driver and 28.5" for the officer as measured from the inside door pan to the top edge of the tunnel. The dimension measured at the "H" (hip) point, with the seat in the lowest position, shall be a minimum of 28.5" for the driver and 27" for the officer. No Exception.

- Recessed sections for ease of mounting equipment at the rear of the tunnel or for compartments and bases which can be used for installing Fire/EMS equipment and components such as hand- held radios.

CAB DASH & ENGINE TUNNEL

The cab dash and the engine tunnel of the cab shall be coated with Amershield coating for a durable finish. The color shall be black.

MODULAR CENTER DASH CONSOLE

The dash and front portion of the tunnel shall include an angled modular console centered between the driver and officer positions.

The console shall feature:

- Heavy-duty housing constructed from 14-gauge steel which is powder coated with a durable semi-gloss textured black finish to provide glare and corrosion resistance
- The console top constructed of black anodized Aluminum extruded rails which allow for mounting brackets, plates, and other console options
- Integral nut tracks which allow mounting of equipment to the sides of the console by way of sliding 1/4"-20 hex nuts
- A hinged lid constructed from 16-gauge steel also powder coated for corrosion resistance
- The availability of pre-wiring for specific components
- A modular design for ease of changes and future additions such as changing out brands of radio, types of sirens or adding accessory space
- The console shall offer 4 areas, 2 upper sections, A and B and 2 lower sections, C and D with mounting plates for optional components.

MICROPHONE TABS

One (1) black mounting plate(s) containing mic tabs shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

Driver/Officer.

BLACK MOUNTING PLATE

One (1) black mounting plate(s) containing blank plates shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

BLACK MOUNTING SWITCH PLATE

A black mounting plate containing a switch panel with seven (7) switches shall be provided and incorporated in the center dash console.

BLACK MOUNTING PLATE FOR RADIO

Two (2) black mounting plate(s) containing radio mounting shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

- Harris Model M7300 B6-B9
- King GMH Plus- Install blank plate

BLACK MOUNTING PLATE FOR POWER POINTS

One (1) black mounting plate(s) containing two (2) 12 volt power points and two (2) dual USB power points shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

- B10-11

CONSOLE MOUNTED ACCESSORY BOX

Two (2) black mounting plate(s) containing an open accessory box shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

- C1-9
- D1-9

CONSOLE MOUNTED CUP HOLDER

Two (2) black mounting plate(s) containing two cup holders shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

- C11-14
- D11-14

CONSOLE MOUNTED SIREN

One (1) black mounting plate(s) containing mounting for a siren shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

CONSOLE MOUNTED TRAFFIC LIGHTBAR CONTROLLER

One (1) black mounting plate(s) containing a plate to mount the traffic advisor lightbar controller shall be provided and incorporated in the modular dash console.

The location(s) shall be as follows:

- A5-7
- TAL-65

INSTRUMENTATION PANEL

The instrumentation panel inlay shall be painted a gloss black.

CAB HEADER

The cab header shall offer Heavy-duty, durable construction using resin transfer molding (RTM) technology formed composite material. The composite material shall be .28" thick for improved resistance and military type strength.

RTM is a low pressure, closed molding process which offers a dimensionally accurate and high-quality surface finish composite molding, using liquid thermoset polymers reinforced with various forms of fiber reinforcements.

The matrix selection of polymer and reinforcement dictates molding mechanical and surface finish performance.

ABS polymer construction shall not be acceptable. No Exceptions.

The cab header shall offer a finish of a polyurethane coating for a rugged design and finish. No Exceptions.

The polyurethane finish shall provide a tough, flexible, impact-absorbing, chemical & abrasion-resistant, even-textured, and skid-resistant surface. The polyurethane finish shall offer durability and scratch resistance even against today's advanced firefighting turnout materials with consistent, even coverage and a uniform texture. The polyurethane coating finish shall resist fading from UV light.

The cab header shall also be purpose built for integration of Fire/EMS components and ease of maintenance with panels above both the driver and officer positions measuring 8" wide x 15"long for mounting radios, aerial controls and switches.

HVAC HEATING AND COOLING SYSTEMS

The interior cab climate control shall be comprised of a triple system that shall include a defroster, a cab and crew heater and air conditioner for a complete HVAC system. The air conditioning system shall be comprised of compressor, condenser, and a minimum of three (3) evaporators to provide consistent temperature control throughout the entire cab.

The system shall be rated as an Emergency Vehicle grade for the use in Fire and Rescue style vehicles and shall provide environmental air treatment in accordance with published SAE standards.

The HVAC system shall be tested and certified by the component manufacturer and a third-party independent certified testing laboratory, including all three systems. Documentation of test results shall be provided with the bid. No Exceptions.

The HVAC system shall be a total and complete system, and shall provide sufficient defrosting, heating, and cooling to the entire cab. The HVAC system shall meet or exceed all specified items without the use of auxiliary heating and cooling systems.

DEFROSTING SYSTEM

The defrosting system shall feature:

- To provide maximum defrost and heating performance, a 30,000 BTU heater-defroster unit will be provided inside the cab.
- The defroster unit will be strategically located under the center forward portion of the instrument panel. For easy access, a removable cover will be installed over the defroster unit.
- Six (6) vents shall be located in the top forward portion of the dash for superior defrosting properties across the entire windshield.
- Defrost vents for the driver and officer windows.
- The system shall be capable of clearing 90 percent or more of the windshield in fifteen (15) minutes or less after a three (3) hour cold soak at 0 degrees Fahrenheit (-17.78 degrees Celsius).
- The system shall exceed Flash Fogging standards that are set forth in the SAE Heavy-duty Cab with Sleeper specifications. Documentation from a third-party testing facility shall be available upon request. No Exception.

- The defroster will 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.

HEATING SYSTEM

The heating system shall feature:

- Delivery of a minimum of 82,000 BTU/hour of heat to the entire cab.
- Heat and air circulation shall be provided to the driver and **officer** foot area of the cab as standard through ducting in the foot well area of both positions. No Exception.
- Substantial air movement and heating provided to the driver and officer's position, Composite dash will have six (6) adjustable louvers, located in the dash, three (3) adjustable louvers directed at the driver and three (3) adjustable louvers directed at the officer and floor vents at the driver and officer. Aluminum dash will have (4) adjustable louvers, located in the dash, two (2) adjustable louvers directed at the driver and two (2) adjustable louvers directed at the officer and floor vents at the driver and officer.
- Dual overhead units, with five (5) adjustable louvers shall be mounted above the rear facing seat positions on the driver and officer side of the cab
- The heater shall be plumbed with a shut off valve at the engine, so that the coolant bypasses the heaters.

AIR CONDITIONING

The air conditioning system shall feature:

- One (1) evaporator shall be located under the center dash and Two (2) crew overhead evaporators located near the B-pillar on each side of the cab allowing for greater frontal visibility for the forward-facing crew seating and allowing for more interior mounting of accessories.
- A gravity condensation drain system shall be utilized. These drains shall remove all condensation from the evaporator units and direct it to the exterior of the chassis cab for optimal performance. Systems utilizing pumps to remove condensation, or gravity systems with poles or other obstructions located within the cab to route drains through shall not be acceptable. No Exceptions.
- Substantial air movement for optimum cooling shall be provided to the driver and officer positions, with six (6) adjustable louvers, located in the dash, three (3) adjustable louvers shall be directed at the driver and three (3) adjustable louvers shall be directed at the officer and floor vents at the driver and officer.

- The air condition system shall be capable of cooling the cab from outside ambient average temp of 104 degrees Fahrenheit (40 degrees Celsius) to an average inside cab temp of 71 degrees Fahrenheit (22 degrees Celsius) at no less than 50% humidity in 30 minutes with an engine RPM of 1250, after a two (2) hour heat soak. A certification document from the testing facility shall be available upon request. No Exception.

Proposals offering ceiling mounted evaporator units in the center of the cab above or on the engine tunnel shall not be accepted as this is a safety consideration due to the lack of visibility and communication within the cab.

CAB PAINT AIR CONDITIONING CONDENSER COVER

The air conditioning condenser cover shall be made out of aluminum and shall be painted to match the roof color.

Plastic condenser covers will not be acceptable. No Exception.

HEATER HOSE

The heater hose inside the cab for the HVAC system shall be premium silicone hose.

HEATER HOSE INSULATION

The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose improving heating in extreme cold climates. The heater hoses which shall be routed inside the cab shall not be insulated.

The Heater Hoses on the Chassis and up to and under the Cab shall be insulated.

CONDENSER

The cab air conditioning system shall include one (1) low profile HE-condenser which shall be centered on the driver's side of the cab.

HEATING AND COOLING CONTROLS

The HVAC system shall be controlled through all available vistas, and the HVAC system for the crew area shall be controlled through a manual panel located in the crew area.

REAR CREW AREA CONTROLS – FORWARD FACING DRIVER'S SIDE

The controls for the crew area heat shall be mounted overhead, along the ceiling above the door on the driver's or officer's side of the cab.

4-FRONT AIRBAGS AND ROLLTEK

4-FRONT AIRBAGS

The Apparatus shall be equipped with a safety system designed to protect occupants in the event of a rollover or frontal impact and shall include IMMI's RollTek and 4-Front.

The 4-Front 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 frontal sensor that will make this determination has been calibrated through extensive testing to optimize the timing for firing the 4-Front system.

The 4-Front system shall deploy the following components in the event of a frontal or oblique impact event:

- Driver side front air bag
- Officer side knee air bag
- Seat Belt Buckle pre-tensioners

ROLLTEK

The Apparatus shall be equipped with the IMMI RollTek system which will provide protection during a slow or fast 90-degree rollover. The system shall analyze the vehicle's angle and rate of roll to determine the exact time for optimal protection.

This system shall include the following:

- Driver and Officer Side Rollover Airbag
- Crew seats shall be equipped with an (SRA) Side Rollover Airbag on all outboard seating positions which are located within 6" of the outer wall
- All seat belts shall also have a buckle pre-tensioner to tighten the belts down to maximize protection of the occupant (no exception)

The driver side air bag shall be mounted inside the steering wheel and shall be designed to protect the head and upper torso of the Driver, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact. The officer side knee bolster air bag shall be mounted in the panel below the officer dash and will be designed to protect the legs of the Officer, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy the front driver and officer air bags and activate the seat belt pre-tensioners on suspension seats to restrain the seat in the lowest travel position. Seat belts will firmly hold both occupants in place.

The cab and chassis design shall have been subjected to a 21 MPH crash impact during frontal and oblique impact testing. Testing shall include all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspension components, fame rail cross members, engine

and transmission and their mounts, frame extensions and body mounts. The testing shall provide configuration specific information used to optimize the timing for firing the air bags.

SEAT AND SEAT BELT COLOR

This seat in the cab shall be gray in color with a red seat belt.

DRIVER SEAT-RollTek

The driver's seat shall be a H. O. Bostrom Sierra high back reclining ABTS bucket seat with Air-50 Suspension. The seat shall have contoured, high-density cushions with lumbar support. The seat cushion shall be supported with a serpentine spring suspension. The back recline shall include a locking mechanism on both sides of the seat and shall have a release handle located at the retractor side of the seat assembly. The seat shall have a double-locking five-inch fore and aft adjustment and Occupancy sensor in the seat cushion. The seat shall include a pneumatic suspension with 3" of vertical ride range adjustable with a molded switch located on the retractor side of the seat assembly. The suspension shall be internally tethered and shall not require secondary tethers from the suspension to the cab structure.

The seat shall be equipped with a red integrated 3-point shoulder harness and lap belt and an emergency locking retractor. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

SEAT BELT DUAL RETRACTOR

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

SEAT BACK

The seat back shall incorporate a standard style headrest.

HEAVY DUTY SHOCK ABSORBER

A heavy-duty shock shall be added to the air ride seat.

SEAT MOUNTING DRIVER

The driver's air seat shall be installed in an ergonomic position in relation to the cab dash.

SEAT MATERIAL

All seats will be equipped with HO Bostrom Zip CleanTM covers and Foam Block™ encapsulated foam.

The seat covers will be made with 1800 denier Durawear Plus™ which is tear resistant and waterproof with a fully adhered PVC vinyl underside and have low seam stitching to help eliminate seem wear. The encapsulated Foam Block™ feature will resist gas absorption in the cushion.

Seat cushions, head rest and side bolsters will have Zip CleanTM covers that will zip off using a heavy-duty zipper to allow for quick removal and easy cleaning. All Zip off covers is designed for machine washing and air drying.

One (1) extra seat cushion cover will be provided per seating position for the seat cushion, the side bolsters, and the head rest.

SEAT BACK LOGO

The seat back shall include the "Rosenbauer" logo. The logo shall be centered on the standard headrest of the seat back.

DRIVER SEAT BOX STORAGE COMPARTMENT

There shall be a storage area under the driver's seat. The compartment shall be 21.25 inches wide, 22.50-inches long, and 6.25 inches high. The access opening shall be 15.00 inches wide and 4.50 inches high.

ALUMINUM ACCESS DOOR

There shall be an aluminum door cover provided for the driver seat compartment. The door shall be coated to match the interior of the cab, and it shall be equipped with a piano style hinge and a manual latch.

- Driver Only

OFFICER SEAT-RollTek

The officer's seat shall be a H. O. Bostrom 500 Series Wide, 2-way high back reclining ABTS bucket seat. The seat shall have contoured, high-density cushions with lumbar support. The back recline shall include a locking mechanism on both sides of the seat and shall have a release handle located at the retractor side of the seat assembly. The seat cushion shall be supported with a serpentine spring suspension. The seat shall have a double-locking five-inch fore and aft adjustment and occupancy sensor in the seat cushion.

SEAT BELT DUAL RETRACTOR

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

SEAT BACK

The seat back shall incorporate a standard style headrest.

SEAT MATERIAL

All seats will be equipped with HO Bostrom Zip CleanTM covers and Foam Block™ encapsulated foam.

The seat covers will be made with 1800 denier Durawear Plus™ which is tear resistant and waterproof with a fully adhered PVC vinyl underside and have low seam stitching to help eliminate seem wear. The encapsulated Foam Block™ feature will resist gas absorption in the cushion.

Seat cushions, head rest and side bolsters will have Zip CleanTM covers that will zip off using a heavy duty zipper to allow for quick removal and easy cleaning. All Zip off covers are designed for machine washing and air drying.

One (1) extra seat cushion cover will be provided per seating position for the seat cushion, the side bolsters and the head rest.

SEAT BACK LOGO

The seat back shall include the "Rosenbauer" logo. The logo shall be centered on the standard headrest of the seat back.

OFFICER'S SEAT BOX STORAGE COMPARTMENT

There shall be a storage area under the officer's seat. The compartment shall be 19.75 inches wide, 17.50 inches long, and 6.25 inches high. The access opening shall be 9.00 inches wide and 4.50 inches high.

FORWARD FACING OUTER SEAT(S) –RollTek

Two (2) forward facing outer crew seat shall be a H. O. Bostrom Tanker 500CT Wide ABTS (All Belts to Seat/Integrated Seat Belts) series with Flip/Up cushion. The seat shall have contoured, high-density cushions with lumbar support and Occupancy sensor in the wide seat cushion. The seat shall include a SCBA storage area with integral, contoured headrest and tapered side cushions with built in SCBA strap storage hooks.

The seat shall include a Cavity Cover.

The seat shall have integrated belt pretension (IBP) device.

Belt Orientation- LH & RH to Door.

SEAT BELT DUAL RETRACTOR

The seat shall be equipped with a red, integrated 3-point shoulder harness and lap belt and an emergency locking dual retractor built into the seat assembly with RiteHite™ Seat Belt customized fit Adjustment. The seat belt shall include a buckle latched switch. The seat belt shall include a rotating bezel guide at the upper shoulder point and shall be routed through the seat frame and covering to protect webbing.

SEAT BACK

The seat back shall incorporate a standard style back.

SEAT MATERIAL

All seats will be equipped with HO Bostrom Zip CleanTM covers and Foam Block™ encapsulated foam.

The seat covers will be made with 1800 denier Durawear Plus™ which is tear resistant and waterproof with a fully adhered PVC vinyl underside and have low seam stitching to help eliminate seem wear. The encapsulated Foam Block™ feature will resist gas absorption in the cushion.

Seat cushions, head rest and side bolsters will have Zip CleanTM covers that will zip off using a heavy-duty zipper to allow for quick removal and easy cleaning. All Zip off covers is designed for machine washing and air drying.

One (1) extra seat cushion cover will be provided per seating position for the seat cushion, the side bolsters and the head rest.

SEAT BACK LOGO

The seat back shall include the "Rosenbauer" logo. The logo shall be centered on the standard headrest of the seat back.

SEAT FRAME FORWARD FACING ENCLOSED

The forward-facing outer seats shall include enclosed seat frames which are located and installed on the rear wall on both the driver and officer side.

Each seat frame shall be constructed of no less than 5052-H32 .1620" thick aluminum plate.

SEAT FRAME FORWARD FACING ACCESS

The seat frame shall include a cutout in the center of the wall facing the tunnel for access.

SEAT FRAME FORWARD FACING ACCESS DOOR

The seat frame shall include a door with a flush latch in the center of the wall facing the tunnel.

SEAT COMPARTMENT DOOR FINISH

The seat box doors shall be finished to match the interior finish of the cab.

SEAT COMPARTMENT FINISH

The seat frame shall be finished to match the interior finish of the cab.

- Exterior Grab Handles 18" Aluminum
- Exterior Grab Handles Bare Aluminum

EXTERIOR GRAB HANDLES

One (1) 18" anti-slip exterior assist handle shall be mounted behind each of the cab doors. The grab handle shall be mounted on stanchions and constructed of aluminum and be 1.25" diameter with a knurled finish enabling non-slip assistance with a gloved hand and mounted on stanchions. The handles shall be mounted to the cab with nutserts. No Exception.

SCUFF PLATE

The grab handles shall include a stainless-steel scuff plate to protect painted surfaces.

ADDITIONAL GRAB HANDLE

The cab face shall include a 11" aluminum grab handle mounted on stanchions which shall be mounted in the center of the grille.

CAB FASCIA

The cab fascia shall offer a traditional, yet aggressive appearance, in its design and shall be constructed of work-hardened 5052-H32 aluminum. This design shall feature:

- A super structure which is fully welded to the cab, for a seamless and robust integration
- Thermoformed headlamp bezels, constructed of impact resistant, polycarbonate composite which is vacuum metalized to eliminate pealing and bubbling of a chrome type film or plating
- Traditional style headlight bezels with 4 x 6 high intensity headlights which shall add a classic look to the fascia while improving visibility

FRONT GRILLE

A prominent front grille shall punctuate the aggressive design of the cab with its outboard wing style warning light bezels and heavy framework. The front grille shall feature:

- Fabricated construction for superior strength and durability
- Stainless Steel mirror finish for a distinctive appearance
- Up to six (6) warning light locations along the mid bar for a variety of warning light combinations

LIGHT BEZEL

The front grille shall include wing light bezels. The bezels shall be constructed of a stainless material and shall be capable of holding two (2) 4" x 6" warning lights.

GRILLE LOGO

The front grille shall include a Rosenbauer logo.

FRONT GRILLE - UNITED STATES OF AMERICA FLAG INLAY

An American Flag shall be painted over the front grille honeycomb inlay, with a minimum of two (2) coats of clear coat to help protect the painted surface.

FLUID FILLS & CHECK

For ease of maintenance and access, the following fluid checks shall be located behind the tiltable and/or removable mesh panel:

- Engine Oil dipstick
- Engine Coolant Sight Glass
- Power Steering Fluid dipstick
- Windshield Washer Fluid

The following fluid fill shall be located behind the tiltable and/or removable mesh panel:

- Power Steering
- Windshield Washer

Proposals including access to fluid checks through the tunnel or by raising the cab shall not be considered.

LED HEADLIGHTS

A set of 4 FireTech 4X6 LED Headlights shall be provided. The kit shall consist of 2 fixtures which operate as SAE VOR "high/low" beams, and 2 fixtures which operate as SAE VO "high-only" beams. All 4 headlights shall

have a SAE "P" parking lamp halo surrounding the driving beams, which shall be energized any time the vehicle park brake is set. Optically, on the high/low headlight, an articulated set of elliptical optics must be used to illuminate the foreground while operating in "low" beam mode. The lens of the high/low beam headlight shall be marked "DOT VOR SAE HL P 16." The lens of the high-only beam shall be marked "DOT VO SAE HL P 16."

All circuits of the headlights shall be designed to operate from 9-32v DC.

All 4 fixtures must be manufactured such that the internal pressure of the headlight remains constant regardless of operating temperature. The housing shall be equipped with a mechanically fastened GORE PolyVent. Similar functioning vent materials affixed to the housing using adhesive shall not be acceptable for substitution.

The headlights shall be installed, wired, and aimed, in accordance with FMVSS108. The manufacturer of the headlights shall warrant the headlights against defects for the life of the apparatus.

The headlights shall be warranted against failure and condensation accumulation by Hiviz for the life of the apparatus.

HEADLIGHT LOCATION

The headlights shall be located on the front fascia in the upper buckets, on each side of the cab grille.

FRONT TURN SIGNALS

Two (2) Whelen SufraceMax LED square front turn signal assemblies shall be supplied. Each turn signal shall be mounted in an attractive façade style bezel which is an integral part of the fascia.

TURN SIGNAL LOCATION

The turn signals shall be located on the front fascia directly below the headlights, one each side of the cab grille.

FRONT MARKER LAMPS

The cab front shall include five (5) LED amber marker lamps above the windshield in accordance with the Department of Transportation requirements.

SIDE MARKER LIGHTS

Two (2) LED side marker light assemblies shall be mounted on the side of the cab ahead of the driver door, adjacent to the front head lamp bezel.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The head light and marker lights shall be activated through a switch on the driver's panel.

CAB FENDERS

The cab wheel wells shall include full width, 14-gauge 304 polished, stainless-steel cab fenders to resist corrosion and enable easier cleaning maintenance. The inner liner, measuring 18" wide shall be constructed of plastic with an outer fenderette measuring 2.5" wide. The inner liner shall be installed with 410 stainless-steel hardware that has been coated with black zinc oxide.

COMMANDER LOGO

A COMMANDER logo shall be installed on each side of the chassis cab.

FRONT MUD FLAPS

The cab and chassis shall be provided with rubber front mud flaps.

AIR RIDE CAB AND CAB TILT SYSTEM

The cab shall be a full tilt style. A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves. The cab tilt shall be mounted on the right-hand side of the chassis frame in front of the batteries below the frame. The mounting bracket shall be Hot Dipped Galvanized.

The dual lift cylinders shall lift the cab 45 degrees from a horizontal plane facilitating easy engine maintenance and removal.

The tilt angle shall allow access to the engine and area under the cab without contacting any components mounted to the gravel shield.

The cab shall include a four (4)-point cab pivot and mounting system; two of the points shall be rubber isolators, and the two rear mounts shall be an air bag suspended mounting system with the cab lock down mechanism. The air bags shall be connected to the chassis air system and include an air leveling valve that adds and releases air to maintain a level cab. The rear air bags shall isolate the cab from the chassis frame to reduce the transfer of road vibrations and frame twist into the cab, while providing superior handling feedback.

The cab shall be locked down by a two (2)-point positive pin-locked rotary latch mechanism that automatically actuates after the cab has been lowered.

The cylinders shall include velocity fuses which prevent unexpected motion with or without the pushing of control buttons. In the event of a hydraulic system failure, the velocity fuses shall retain the fluid in the cylinders.

A redundant mechanical stay arm shall be automatically engaged once the cab has been fully raised. This device must be disengaged using the stay arm control located on the driver's side rear of the cab before lowering the cab.

All mounting points shall be bolted directly to the frame rail or frame extensions.

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

A remote mounted manual back-up pump shall be installed in the event of a system failure of the cab tilt electric pump.

A warning light shall illuminate in the cab instrument panel to indicate whenever the cab is not fully latched in the locked down position, and the parking brake is released.

CAB TILT LIMIT SWITCH

An adjustable cab tilt limit switch shall be included with the cab tilt system. The switch shall effectively limit cab's travel to avoid impact with bumper mounted items, or station ceiling clearance, when being tilted.

There shall be a safety bar to hold the cab at the new adjusted height for additional safety.

CAB TILT LOCK DOWN INDICATOR

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar and the parking brake is released.

REARVIEW MIRRORS

The cab exterior shall include Ramco bus style mirrors, one (1) mounted on the Drivers' door and one (1) mounted on the Officer's side front cab corner radius below the windshield.

The Driver's side mirror shall be model CRM-310-1750-PHCHR. The mirror head shall be injection molded chrome plated ABS plastic that measures 9.5" wide x 17.5" high and is mounted with a polished die-cast aluminum arm.

The Officer's side mirror shall be model CRM-310-1752-A18-PHCHR. The mirror head shall be injection molded chrome plated ABS plastic that measures 9.5" wide x 17.5" high and is mounted with a 18" long polished cast aluminum arm.

The mirrors shall feature a lower heated remote convex glass with an upper heated remote flat glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting reducing vibration. The mirrors shall be corrosion free under all weather conditions.

REARVIEW MIRROR REMOTE ACTIVATION

The driver's panel shall include activation for the rearview mirrors remote function. The driver panel shall also include a switch activating the mirrors to be heated.

CAB TWO TONE PAINT

The cab surface shall be thoroughly washed with grease cutting solvent (PPG DX330) prior to any sanding. The cab surface shall then be sanded, and minor imperfections filled and sanded. The prepared surface shall then be washed again with (PPG DX330) to remove any contaminants from all surfaces to be painted.

The first coating to be applied shall be a pre-treat epoxy primer (.5 to 1.0 dry film build) for maximum adhesion to the body material. The next two to four coats shall be a polyurethane primer resurfacing agent (PPG F4936).

The film build shall be 4-6 mils when dry. The primer coat, after appropriate dry time, shall be sanded with 320-600 grit sandpaper to ensure a maximum gloss finish. The last step shall be an application of at least three coats of PPG FDG polyurethane two-component color (single stage). The film build shall be 2-3 mils when dry. The single stage polyurethane shall provide a UV barrier to prevent fading and chalking.

The cab shall then be painted with the specific colors designated by the customer with a minimum thickness of 2.00 mils of finished paint, followed by a clear topcoat not to exceed 2.00 mils.

CAB PAINT UPPER

The upper or secondary cab color shall be PPG _____ color and _____ number.

PPG; Paint Color; Paint Number.
Paint Process: PPG-FDG 914949

CAB PAINT LOWER

The lower or primary cab color shall be PPG _____ color and _____ number.

PPG; Paint Color; Paint Number:
Paint Process: PPG-FDG 75664

Cab Paint Exterior Breakline - Paint Break F

CAB UNDERCOAT

The cab shall have an undercoat applied prior to the cab being set on the running gear. The under coat shall be a waterborne, one-component, air dry undercoat formulated to prevent chipping, cracking, and marring of painted or unpainted surfaces after exposure to high impact sand, gravel or other abrasive materials. It shall also have high corrosion resistance.

PAINT SPRAY OUT

The customer shall be supplied with a paint spray out for customer approval prior to the cab being painted.

FRONT AXLE

The front axle beam shall be rated to carry 24,000 lbs. and consist of a fabricated box cross section construction with 100ksi plate and a continuous beam architecture to minimize stress points for added durability. The box shaped cross section resists horizontal, vertical, and twisting forces more effectively than traditional I-beam axles while helping to reduce dynamic camber and toe changes therefore a traditional I-beam axle shall not be considered. The axle shall incorporate a removable kingpin feature for ease of kingpin serviceability. The knuckles shall allow for compatibility with disc brakes mounted at the 12 o'clock position and with drum brakes and allow for wheel cut up to 45 degrees. They shall also utilize premium kingpin bushings and seals to provide enhanced protection from the elements to improve bushing life.

The axle shall have a magnetic plug.

The axle shall be warrantied for five (5) years or five hundred thousand (500,000) miles whichever comes first. No Exception.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

FRONT SUSPENSION

The suspension shall consist of multi-leaf parabolic springs with double wrapped front eye that are packaged within an integrated clamp group that allows for ease of OEM assembly on to the axle beam and reduced part count. The clamp group bolts are tightened on the top of the clamp group opposed to the traditional U-bolt on the bottom making it easier to access with a torque wrench for servicing. The spring shall also include a lower shock attachment with an upturned eye. The springs will contain threaded pin bushings to allow simplification of spring alignment as well as long service life and improved ride quality. The suspension and spring geometry will be optimized to provide improved bump steer and Ackermann. Two ZF Sachs twin-tube shocks shall be provided with the front suspension assembly. The shocks shall be specially developed for parabolic leaf springs with a digressive characteristic curve using a patented piston system. The shocks shall feature multi-stage piston and base valves. The combination of valves shall achieve the desired damping characteristics that are ideal for the application. The suspension shall be rated for a minimum of 24,000 lbs. No Exception.

POWER STEERING GEAR WITH ASSIST

The power steering gear shall be a TRW model TAS 85 and shall include the following:

- A balanced, hydraulic, positive displacement, sliding vane power steering pump which is gear driven from the engine

- One-piece, 2" diameter drag link for maintaining consistent wheel alignment resulting in less maintenance.

- The steering gear shall be mounted on a plane that is at a 9-degree angle in relationship to the center plane of the chassis. This mounting technique is designed to reduce the operating angle of input steering shafts. A more direct, responsive, and smoother handling vehicle will result from these unique design characteristics.

A certified torque and geometry study by TRW shall be available upon request.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to ensure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the apparatus manufacturer.

Alignment documentation shall be available upon request.

- 425 Front Tires

STEER TIRES

The steer tires shall be Goodyear 425 65R 22.5 20PR "L" tubeless radial G296 mixed service tread.

The steer tires shall feature:

A stamped load capacity of 22,800 pounds per axle with a speed capacity of 68 miles per hour when properly inflated to 120 pounds per square inch and a 24,400 pound per axle intermittent service rating.

TIRE BALANCING

There shall be counter acting balancing beads used in all the tires.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50-inch X 12.25-inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.

FRONT BRAKES

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17" vented rotors. The disc brakes shall be provided with visual wear indicators.

The front brakes shall include brake chambers supplied by Meritor and shall be approved per application.

STEERING WHEEL AND COLUMN

The cab shall include a Douglas Autotech steering column. The steering column shall feature an 18" four (4) spoke steering wheel located at the driver's position; a five (5) position tilt and 2.25" telescopic adjustment. The steering wheel shall be provided with a black vinyl cover with foam padding and a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

The chassis shall include dual electric 12-volt horn with a minimum 110 decibels.

REAR AXLE

A Meritor RT-58-185 tandem driving axle shall be incorporated as the rear axle for the chassis. The axle shall feature:

- Rated capacity of 60,000 pounds
- Heavy duty Hypoid gearing for longer life, increased strength and quieter operation
- Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage
- Rigid differential case for high axle strength and reduced maintenance
- Rugged Dependability
- Rectangular shaped, hot formed housing with a standard wall thickness at spring seat of .56" for extra strength and rigidity
- A magnetic plug
- 5-year warranty

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR SUSPENSION

The tandem rear axle shall feature a Hendrickson ULTMAAX™ severe duty rubber ride suspension. The suspension shall be designed to balance outstanding durability, load stability, and mobility. The system shall offer increased stability as the load increases.

The suspension shall feature:

- Progressive rate springs.
- Increased stiffness as the load increases
- Long service life and easy replacement for reduced downtime
- High-roll stability characteristics

The rear suspension capacity shall be rated at 60,000 pounds.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a minimum of 5852 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. The system shall include an anti-compounding feature. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A six (6) sensor, six (6) modulator Anti-lock Braking System (ABS) shall be installed on the front and tandem rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the tandem rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

The Meritor Wabco ABS and ESC system shall come with a three (3) year/300,000-mile parts and labor warranty.

With air manifold.

REAR BRAKES

The rear brakes shall be Meritor 16.50-inch X 7.00-inch S-cam drum type.

The rear brakes shall include brake chambers supplied by Meritor and shall be approved per application.

REAR BRAKE DUST SHIELDS

The rear brakes shall be equipped with brake dust shields.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

REAR AXLE DIFFERENTIAL CONTROL

The tandem axles shall include an inter-axle differential lock which shall allow both axles to be engaged as drive axles.

INTERAXLE DIFFERENTIAL LOCK CONTROL ACTIVATION

The inter-axle differential lock control shall be activated through a switch on the driver's panel.

REAR AXLE DIFFERENTIAL CONTROL

The rearward axle of the tandem axles shall include a driver controlled differential lock. This shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed. The differential lock is to be engaged at approximately 1 mph and is not for use at speeds greater than 25 MPH.

The differential lock shall be controlled by a switch within easy reach of the driver. The light on the switch shall illuminate with positive engagement of the differential control.

REAR AXLE DIFF. CONTROL ACTIVATION

The rear axle driver controlled locking differential control shall be activated through a switch on the driver's panel.

REAR TIRES

The rear tires shall be Goodyear 315/80R 22.5 16PR "L" tubeless radial G751 MSA Duraseal mixed service tread.

The rear tires shall feature:

A stamped load capacity of 33,080 pounds per axle with a speed capacity of 68 miles per hour when properly inflated to 130 pounds per square inch.

TIRE BALANCING

There shall be counter acting balancing beads used in all of the tires.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50-inch X 9.00-inch aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

VALVE STEM EXTENSION - TANDEM AXLE

To allow for easy checking and inflation of the rear inner tires shall be equipped with a multi-layer valve stem extension, the layers shall be as follows: starting from the inner to out layer, stainless steel metal core, air tube, stainless steel jacket, protective color.

VEHICLE TOP SPEED

The top speed of the vehicle shall be programmed at approximately 60 MPH +/-2 MPH at governed engine RPM.

AIR TANK BRACKETS & STRAPS

The air tank(s) shall be mounted to the frame rail with brackets that are hot dipped galvanized thereby creating a barrier and cathodic protection from corrosion and eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion. Powder coated or painted air tank brackets shall not be accepted. No exception.

All the air tank straps shall be plastic coated stainless-steel cable. No Exception.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

Park brake system shall include an anti-compounding feature.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the driver's side dash to the right of the steering column within easy reach of the driver.

AIR DRYER

The brake system shall include a Wabco System Saver 1200 Plus air dryer with an integral 100-watt heater with a Metri-Pack sealed connector. The system shall have an integrated purge volume and integrated governor.

The system shall have the following features:

- Premium desiccant provides greater water adsorption
- Replaceable spin on cartridge for simple maintenance
- Compact light weight design
- Pressure relief safety valve
- Turbo cut-off valve for boosted compressor applications
- Service components are external for easy replacement
- Common service components proven for reliability and quality
- Integrated with the air governor.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line orange, the parking brake line yellow and the auxiliary (outlet) will be black, in accordance with SAE standards. No Exception.

Brass push-lock type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

PRODUCTION INFO

The Air tanks shall be painted to match the color-coded lines. If a split tank is used, each portion of the tank shall be painted to match the function.

The electrical looms running inside the frame rails shall be separated from the air lines.

AIR HORN RESERVOIR

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

FRAME

The chassis frame shall consist of two (2) "C" style parallel rails, constructed of high strength low alloy and shall feature the following:

- A Stenx **MODEL 110XF** 10.19" high by 3.63" deep cold rolled steel frame or equivalent.
- .38" thick flange
- Inner channel measuring 9.31" high x 3.25" deep x .25" thick
- The 10.19" frame height shall be maintained throughout the entire length of the frame to allow for maximum storage capacity for the entire apparatus.
- If frame rails that are larger than those specified are to be utilized, the maximum height of each frame rail shall not exceed 10.25" at any point on the frame rail. This will ensure the lowest possible vehicle center of gravity allowing maximum stability as well as providing the lowest body height possible.
- Frame rail shall have a consistent frame web throughout the entire length.
- The entire frame rail design shall be manufactured in the United States of America and readily available on the aftermarket.
- Grade 8 Structural fasteners, Huck bolts shall not be acceptable. No Exception.
- The hardware used for the chassis shall be corrosion resistant. The process shall be dip-spin-bake coated with two coats of zinc/aluminum metal flake coating in an inorganic binder. Coating one is to be zinc flake and coating two is to be aluminum flake. The zinc flakes sacrificially corrode to protect the base metal. The aluminum flakes prolong the life of the zinc. Salt fog test life, based on ASTM B117 on unassembled fasteners, is 1000 hours to red rust. The same test on assembled fasteners is 750 hours to red rust. The two-step coating is RoHS compliant as it eliminates the hexavalent chromium used in the passivation of electroplated zinc coatings to create yellow zinc (zinc dichromate). The elimination of the zinc plating also greatly reduces the likelihood that hydrogen embrittlement will occur. Hydrogen embrittlement is a side effect of electroplating that reduces toughness and can lead to fracture. No Exception
- Manufacturer's lifetime warranty

The frame ratings shall be as follows:

- 110,000 PSI minimum yield strength high strength low alloy steel
- Minimum Resisting Bending Moment (RBM) of 2,810,000-inch pounds per rail

To avoid frame cracking and failure over time, the top flange of the frame adjacent to the engine installation shall have a tapered design. Notches for engine components shall not be accepted due to fatigue and the potential for cracking. No Exceptions

UNDER-FRAME REINFORCEMENT

An under slung frame reinforcement shall be installed below the frame rails in the transmission area to increase the vertical rigidity of the frame.

The under-frame reinforcement provides:

- Enhanced handling
- Improved ride quality
- Increase resistance to frame and cross member fatigue
- Enhanced vehicle stability providing improved safety to occupants

CROSS MEMBERS

There shall be a minimum of seven (7) steel plate cross members installed on the apparatus.

- 50,000 psi minimum yield strength steel plate cross members
- Manufacturer's lifetime warranty to match frame warranty. No Exceptions.
- Installed with one-piece cross member gusset to maximize vertical strength and minimize cross member flex
- Crossmembers can be inverted when required to allow for PTO drive line installation without the need for notching or modifying the cross members in anyway. No Exceptions.

FRONT FRAME EXTENSION

A single piece 80,000 PSI steel extension shall be installed on the front of the frame rails.

- Reduces frame flex which translates into improved vehicle handling and ride quality

- Designs using multiple pieces bolted together extensions will not be acceptable since they are prone to more flexing, possible frame failure and cab cracking
- Allows radiator to be removed through the bottom of the frame extension without tilting the chassis cab
- Minimizes damage to the chassis cab in the event of frontal impact accident
- Maintains structural integrity of the chassis frame rails while attaching bumper extensions of varying lengths
- Splayed or notched frame rails and/or extensions shall not be accepted
- Provides foundational strength and stability of the cab tilt system which provides superior access to engine and cooling components

Units with Wheelbase 200" or larger or over 1,000 gallons of water and foam need a double frame.

FRAME FINISH

Prior to assembly, each frame rail section and cross members shall be hot dip galvanized. The galvanizing process will permeate each frame section to prevent rust and corrosion and not be merely an over-coating. The galvanized frame sections shall be provided in the natural finish eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion.

Galvanizing shall provide a barrier and cathodic protection from corrosion. During the galvanizing process, the complete frame sections and cross members shall be immersed in molten zinc; except for the cross member that contains the engine mounts. Through diffusion, the zinc shall bond to the steel at the molecular level. The resulting zinc coating shall provide a barrier that shields the steel from the environment.

FRONT FRAME EXTENSION FINISH

The front frame extension shall be hot dipped galvanized to resist weather, dirt, and other corrosive material.

Proposals offering powder coated or painted frames shall not be accepted. No Exceptions.

FRAME GALVANIZING WARRANTY

Rosenbauer Motors, LLC hereby warrants the galvanized frame rails shall be warranted for a period of twenty 20 years and includes the following coverage:

- The galvanized surfaces of the frame rails and cross members shall be free from corrosion caused by dissimilar metals, adhesion, blistering or peeling.

- The galvanized surfaces of the frame rails and cross members shall be free from any corrosion perforation.

Under this warranty Rosenbauer Motors, LLC agrees to repair or refinish any galvanized surface that has been found to have a defect caused by defective manufacturing methods or galvanized material where there is no indication of abuse, neglect, unusual or other than normal service providing that such item or items are, at the option of Rosenbauer Motors, LLC, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within twenty years from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to a defect caused by defective manufacturing methods or galvanized material selection. Written authorization for repair or item replacement must be sought from Rosenbauer Motors, LLC customer service prior to the repair or item replacement occurring.

Coverage Period

- 0 – 10 years = 100%
- 11 – 15 years = 50%
- 16 – 20 years = 25%

This warranty shall not apply to or cover:

- Normal maintenance services including clean, and repair of surface corrosion caused by normal road salt/chemicals or debris contacting the frame rails and cross members.

- Damage to the galvanized frame rails caused by exposure to severe environmental or chemical conditions or acidic environment.

- Any item that has been repaired, replaced, or altered by a facility not approved in advance by Rosenbauer Motors, LLC, or in a manner which, at Rosenbauer Motors, LLC discretion, may adversely affect the safe operation or durability of the vehicle or item.

- Special, incidental, or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.

- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, fire or acts of God.

This warranty is in lieu of all other warranties expressed or implied, and all other obligations or liabilities on our part. This warranty does not supersede the structural warranty We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer Motors, LLC, 5190 260th St. Wyoming, MN 55092.

NOTE: Surety bond, if required, will cover standard one-year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

ENGINE

A Cummins X 15-liter diesel fueled; turbo charged engine shall feature the following:

- One of the highest power to weight ratios in its class
- Heavy-duty replaceable wet liners, roller followers, by-pass oil filtration with replaceable spin on cartridge and targeted piston cooling for longer service in tough work environments
- Improved cooled EGR system
- 912 cubic inches of displacement
- High pressure common rail fuel system producing a precise quantity of fuel at ultra-high pressures
- Fully integrated, robust electronic engine controls
- Electric fuel lift pump. No Exceptions.

The engine shall be coupled with a Holset VGT™ (Variable Geometry Turbocharger).

The engine shall be filled with Citgo brand Citgard 500 (or equivalent) SAE 15W40 CJ4 low ash engine oil for proper engine lubrication.

The engine shall be EPA certified to meet the 2021 emissions standards without compromising performance, reliability or durability using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an original equipment manufacturer installed oil drain plug.

The engine shall include programming which will govern the top speed of the vehicle.

ENGINE PLACEMENT

The engine shall be a maximum of 36" from the center line of the front axle to the front face of the engine block.

The engine valve cover shall be a maximum of 23" from the top of the frame.

The engine placement shall provide optimal weight distribution to the front axle to enhance vehicle handling.

More weight out in front of the front axle can cause a "fulcrum effect" and cause unsafe "bump steer" conditions.

The engine shall be mounted in a position that provides for the lowest possible height of the interior engine tunnel. An engine tunnel height from the floor of the chassis cab shall be no more than 21" high inside the cab.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight, and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be integrated in the air dryer assembly.

HORSEPOWER

The engine shall have 600 horsepower at 1800 RPM, with a governed speed of 2100 RPM.

The engine shall have 1850-foot pounds of torque at 1150 RPM.

The engine shall have a standard drain plug.

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, one (1) piece eleven (11) blade Horton clutched type fan drive and shroud.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be failsafe so that if the clutch drive fails, the fan shall engage to prevent engine overheating due to the fan clutch failure.

The clutch fan shall automatically engage in pump mode (when applicable).

AUXILIARY ENGINE BRAKE

A Cummins engine compression brake, for the six (6) cylinder engine, shall be provided. The engine compression brake shall:

- Activate upon 0% accelerator when in operation mode and activate the vehicle's brake lights.

TRANSMISSION PRE-SELECT

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed. The transmission shall assist the secondary braking system, thereby slowing the vehicle.

AUXILIARY ENGINE BRAKE CONTROL

An auxiliary engine brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The auxiliary brake shall be controlled through an on/off switch and individual low/medium/high selector switches on the Driver's panel.

ENGINE PROGRAMMING HIGH IDLE SPEED

The Engine high idle will be set at 1250 RPM. The high idle will be operational only when the parking brake is set, and the truck transmission is in neutral.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control. The high idle shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output and optimize output of the HVAC system.

This device shall operate only when the master switch is activated, and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually through a virtual switch in the Vista, or automatically re-engage when the brake is set, or when the transmission is placed in neutral. A light on the Vista screen shall indicate the high idle speed control.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located behind the fascia.

The filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame.

This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The intake shall also feature a cyclone style water separator to remove unwanted moisture from incoming air.

The engine shall include an air intake filter which shall be bolted to the frame and located under the front of the cab. This dry type of filter shall ensure dust and debris is safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The filter must have a capacity of no less than 1350 cubic feet of air per minute. The filter paper media must be of a flame retardant treated material. An electric air filter restriction indicator shall also be included with the system.

ENGINE EXHAUST SYSTEM

The exhaust system shall include a one-piece diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction catalyst (SCR) to meet current EPA standards.

The selective catalytic reduction catalyst shall utilize a diesel exhaust fluid solution consisting of urea and purified water to convert nitrogen oxide into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system between the DPF and SCR chambers.

The system shall utilize 0.065-inch-thick stainless steel exhaust tubing between the engine turbo and the DPF.

The after-treatment canister through the end of the tailpipe shall all be connected with zero leak gasketed clamps.

The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires with an exhaust gas diffuser.

The diffuser shall lower exhaust gas temperatures during the regeneration cycle.

DIESEL EXHAUST FLUID TANK

There shall be a molded cross linked polyethylene tank for the Diesel Exhaust Fluid (DEF). The tank shall have a capacity of not less than five (5) usable gallons (18.92 Liters) and shall be mounted on the left-hand side of the chassis frame in front of the batteries below the frame. The mounting bracket shall be Hot Dipped Galvanized.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

DIESEL EXHAUST FLUID TANK

There shall be an access door provided in the top rear step of left side crew area for access to the DEF tank.

ENGINE EXHAUST ACCESSORIES

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

DIESEL PARTICULATE FILTER CONTROLS

Provide DPF system status annunciation indicator lights, lights shall be installed on driver dash to alert driver when regeneration is needed and when DPF is in an active re-generation cycle.

Warning systems shall provide DEF low level warning.

Driver's dash shall be provided with two (2) controls for the Diesel particulate filter; one (1) manual regeneration switch to activate a regeneration cycle manually when passive burn is unobtainable due to driving conditions; and one (1) Regen "Inhibit Switch".

The switches shall be located in a covered location.

ENGINE COOLING SYSTEM

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

The system shall include and feature the following:

- A vertically stacked charge air cooler providing the maximum cooling capacity for the engine. Proposals offering horizontally stacked charge air cooler shall not be acceptable. No Exceptions
- The charge air cooler and radiator shall measure not less than 1382 square inches
- A surge tank with a low coolant probe and capable of removing entrained air from the cooling system, with built in sight glass
- Radiator re-circulation shields to prevent heated air from re-entering the cooling system and affecting performance
- Mounts allowing the entire radiator to drop through the frame for service when needed - No Exceptions

- Engine placement shall provide a minimum of 8" between the engine fan and radiator to maximize the airflow and cooling of the engine.
- A Spin on Element water filter with corrosion inhibitor shall be provided for the cooling system. No Exception.
- The coolant filter shall be provided with two (2) shut off valves, one (1) one inlet and one (1) outlet. No Exception.
- Cooling system shall be tested and certified by the engine manufacturer

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include constant tension spring clamps.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.

Supplemental coolant additives (SCA) are not required as this is part of the extended life coolant makeup.

ADDITIONAL COOLANT SHUT OFF VALVE

An additional coolant shut off valve with connection shall be installed in the chassis coolant lines with a connector. This shall allow for the installation of an additional heater such as a pump compartment heater without draining the coolant system.

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. This pump heat exchanger shall circulate water from the fire pump to the heat exchanger thereby reducing the temperature of the coolant for the engine. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant.

TRANSMISSION

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing; one (1) in the 8:00 o'clock position and one (1) in the 1:00 o'clock position.

The transmission shall include two (2) internal oil filters and Allison approved transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

- 1st 3.51:1
- 2nd 1.91:1
- 3rd 1.43:1
- 4th 1.00:1
- 5th 0.74:1
- 6th 0.64:1 (if applicable)
- Rev 4.80:1

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

The transmission shall include an original equipment manufacturer installed magnetic oil drain plug.

AUTOMATIC NEUTRAL

The transmission shall be provided with an automatic neutral. When the parking brake is applied the transmission automatically returns to neutral.

TRANSMISSION FLUID

The transmission shall include two (2) internal oil filters and Allison approved transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

TRANSMISSION SHIFT SELECTOR

An Allison GEN V pressure sensitive range selector touch pad shall be provided and located on the tunnel to the right of the driver.

The shift selector shall provide an indicator on the digital display and shall alert the driver/operator when a specific maintenance function is required.

PTO LOCATION

The transmission driven power take off (PTO) shall be mounted in the 1:00 o'clock position.

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button.

TRANSMISSION PROGRAMMING

The EVS Vocation Package Number 198 for the fire service for this apparatus as a Pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector which requires re-selecting the drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. The transmission will detect the pump engaged signal and automatically select or deselect fourth gear lock-up. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A nine (9) pin diagnostic connector will be provided.

The trans module shall contain the following circuits:

Function ID	Description	Wire Assignment
C1	PTO Drive Interface Output 1	142
J	Fire Truck Pump Mode (4th Lockup)	122/123
C	Range Indicator	145 (4th)
G1	PTO Drive Interface Output 1	130
	Signal Return	103

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints.

The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1065 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL SYSTEM

The fuel tank shall have a capacity of fifty (50) gallons/one hundred eighty-nine (189) liters and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length. The tank shall offer:

- A vent port which will facilitate venting to the top of the fill neck for rapid filling without any "blow-back"
- Two (2) 2" NPT fill ports for left- and right-hand fill with a .5" NPT drain plug centered side to side 9" from the front of the tank
- A roll over ball check vent for temperature related fuel expansion and draw
- A design including dual draw tubes and sender flanges
- A baffled design and shall be constructed of steel
- A black Powder Coated exterior to ensure corrosion resistance

The fuel tank shall be mounted below the frame, behind the rear axle. There shall be two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank, allowing the tank to be easily lowered and removed for service purposes.

The strap hanger material shall be stainless steel. No Exceptions.

For isolation of vibration and movement, rubber isolating pads shall be provided between the tank and the hanger strap assemblies. The tank straps shall be attached to rubber coated cross members which help isolate the tank from frame flex.

Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

All fuel lines shall be connected with steel fittings with all fittings pointed towards the right side (curbside) of the chassis.

The chassis fuel lines shall feature an additional 4' of length provided so the tank can be easily lowered and removed for service purposes which shall be coiled and secured at the top of the tank.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be black aramid braided lines with a fiber outer braid. The fuel lines shall be connected with reusable steel fittings. Fuel line is compatible with bio-fuel blends.

FUEL SHUTOFF VALVE

Two (2) fuel shutoff valves shall be installed at the fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

FUEL COOLER

The crossflow air to fuel cooler shall be all aluminum and shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located reward of the battery box, under the frame.

The fuel cooler shall incorporate a fan for improved heat transfer.

The fuel cooler shall be mounted to the frame using hot dipped galvanized brackets. Powder coated or painted brackets shall not be acceptable. No exception.

ALTERNATOR

The charging system shall include a 320-amp Leece Neville 12-volt alternator. The alternator shall include a self-excited integral regulator.

V-MUX ELECTRICAL SYSTEM

There shall be a 12-volt direct current single starting electrical system providing power to all components for the cab and chassis. The system shall feature:

- A Weldon Multiplexed system
- 300-degree Fahrenheit high temperature, flame retardant loom
- All SAE wiring color coded and labeled as to its function
- Wiring which is cross link with 311-degree Fahrenheit insulation
- A suppressed system in accordance with SAE J551

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload.

General protection circuit breakers will be a combination of automatic and manual reset breakers. This will provide a durability and capacity maximization of the electrical system. When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

ELECTRICAL HARNESSING INSTALLATION

To ensure rugged dependability, all wiring harnesses installed by the apparatus manufacturer will conform to the following specifications:

- SAE J1128 - Low tension primary cable
- SAE J1292 - Automobile, truck, truck-tractor, trailer, and motor coach wiring
- SAE J163 - Low tension wiring and cable terminals and splice clips
- SAE J2202 - Heavy duty wiring systems for on-highway trucks

- NFPA 1901 - Standard for automotive fire apparatus
- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks, and buses
- SAE J1939 - Serial communications protocol
- SAE J2030 - Heavy-duty electrical connector performance standard
- SAE J2223 - Connections for on board vehicle electrical wiring harnesses NEC - National Electrical Code
- SAE J561 - Electrical terminals - Eyelet and spade type
- SAE J928 - Electrical terminals - Pin and receptacle type A

For increased reliability and harness integrity, harnesses will be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes will not be allowed.

Wiring will be run in loom or conduit where exposed and have grommets or other edge protection where wires pass through metal. Wiring will be color, function, and number coded. Wire colors will be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires will not be allowed. Function and number codes will be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors will be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture, and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

- All wire ends not placed into connectors will be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap will not be allowed.
- All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
- For low cost of ownership, electrical components designed to be removed for maintenance will be quickly accessible. For ease of use, a coil of wire will be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound will be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas will have protective Coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails.

- Heat shields will be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust will be protected by a heat shield.
- Cab and crew cab harnessing will not be routed through enclosed metal tubing. Dedicated wire routing channels will be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab will allow for easy routing of additional wiring and easy access to existing wiring.
- All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
- All standard wiring entering or exiting the cab will be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

BATTERY CABLE INSTALLATION

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer will conform to the following requirements:

SAE J1127 - Battery Cable
SAE J561 - Electrical terminals, eyelets, and spade type
SAE J562 - Nonmetallic loom
SAE J836A - Automotive metallurgical joining
SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
NFPA 1901 - Standard for automotive fire apparatus

Battery cables and battery cable harnessing will be installed utilizing the following guidelines:

- All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number.
- Splices will not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables will be color coded. All positive battery cables will be red in color or wrapped in red loom the entire length of the cable. All negative battery cables will be black in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus will be coated to prevent corrosion.

ELECTRICAL COMPONENT INSTALLATION

All lighting used on the apparatus will be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding will not be allowed. An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests will be recorded and provided to the purchaser at time of delivery.

SUMMARY OF LOAD MANAGEMENT SYSTEM

In the V-MUX electrical system there will be eight pre-defined Load Manager Trigger points spaced apart in 0.4 Volt increments. Each Output channel can be set for Load Management that will be turned OFF if node voltage falls below a certain level. The trigger points will be configured as shown below.

Load Manager Trigger Points:

- 1: 12.5-V Load Shed Region 1 (12.5 - 12.1 V)
- 2: 12.1-V Load Shed Region 2 (12.1 - 11.7 V)
- 3: 11.7-V Load Shed Region 3 (11.7 - 11.3 V)
- 4: 11.3-V Load Shed Region 4 (11.3 - 10.9 V)
- 5: 10.9-V Load Shed Region 5 (10.9 - 10.5 V)
- 6: 10.5-V Load Shed Region 6 (10.5 - 10.1 V)
- 7: 10.1-V Load Shed Region 7 (10.1 - 9.7 V)
- 8: 9.7-V

When the voltage of a Load Managed device recovers back above the trigger point, there will be an additional 30 seconds before the Output channel is turned back ON. This buffering time is to ensure that the added load doesn't immediately pull the voltage back below the trigger point.

Below are the standard voltage managed outputs that will be triggered off at 12.1 V.

- HVAC FAN MED
- HVAC FAN HIGH
- HVAC FAN LOW
- AUX DEFROST FANS
- A/C CONDENSER FANS RLY
- A/C COMPRESSOR CLUTCH

AUTO THROTTLE (AUTO HIGH IDLE)

There will be an Automatic High Idle (Auto Throttle) logic that will run in conjunction with the Load Management. The Auto Throttle logic will be ran on the Hercules node under the passenger side kick panel compartment. The standard system design will be triggered on at 12.3 V and triggered off at 12.6 V with a 30 second delay before disengagement. The Auto Throttle function will act to turn the V-MUX High Idle Output ON and OFF. In turn the High Idle sends a signal to the engine ECU. The Auto Throttle Command will be interlocked with **Park Brake** and **Park/Neutral** for safety. A **Service Brake** override interlock will also be configured to immediately return the engine to Low Idle if the vehicle must move.

MULTIPLEX DISPLAYS

Two (2) Weldon Vista IV displays shall be located one (1) on the driver's side dash and one (1) on the officer's side of the dash.

The Vista IV displays shall feature:

- A full color LCD display screens
- A message bar displaying the time of day, and important messages requiring acknowledgement by the user
- Four (4) push button style controls on either side of the screen for the on-board diagnostics
- Seven (7) push button style controls located below the screen for the on-board diagnostics
- Video ready display screens for back- up cameras, thermal cameras, and DVD
- A DIN type input connector ready for GPS interfacing shall be incorporated into the back of the display
- There shall be a display which indicates any open cab door with a visual display.

The Vista IV displays shall measure approximately 10.36" wide x 7.63" in height.

DRIVER SWITCHES

The driver switch panel to the right of the Driver's position shall include one (1) row with six (6) backlit rocker switches with laser etched labels located under the Weldon Vista screen.

Standard switches shall include:

- Windshield Wiper/Washer Control (except when Smart Wheel is specified)
- Dash panel dimmer switch

V-MUX WARRANTY – 4 YEAR

A four (4) year limited (V-MUX) multiplex system warranty, of Weldon Technologies, Incorporated; shall be provided by the apparatus manufacturer for parts and labor, while under normal use and service; against mechanical, electrical, and physical defects from the date of manufacture.

The warranty shall exclude; sensors, shunt interface modules, serial or USB kits, transceivers, cameras, GPS, and electrical display screens, which shall be limited to a period of one a (1) year repair parts and labor from the date of installation. A copy of the warranty shall be provided with each Bidders proposal for the review and evaluation of the Purchaser.

AM/FM RADIO WITH WEATHERBAND

A radio receiver shall be located in the headliner. The receiver shall handle vibrations, temperature fluctuations, and humidity with ease. The front panel's protective covering shall keep out any dust and debris.

The receiver's AM and FM tuner shall feature presets for radio stations, and the Weather Band tuner shall include automatic NOAA weather for alerts to any severe weather. A portable player jack shall be available on the front panel.

The backlit LCD display shall feature easy to read digital readout in all lighting conditions.

OVERHEAD RADIO MOUNT

The overhead radio shall be mounted on the officer's side.

SPEAKERS

Four (4) overhead speakers shall be provided in the cab for the radio.

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Service Brake
- Engine Hours
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type A or B USB connection point, remotely mounted in the left side foot well of the cab. The latest software shall be available for download from the Weldon website.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released.

Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

CAB INSTRUMENTATION

The instrumentation panel within the cab shall feature a gauge panel which shall include three (3) 5"diameter information centers, telltale indicator lamps, control switches, alarms, and an LCD diagnostic panel.

The gauges shall be easy to read including red backlighting.

The instrument panel shall contain the following gauges and indictors:

The middle information center shall include:

- A programmable speedometer to read either 0 to 140 MPH or 0 to 140 KM/H
- An amber telltale lamp indicating the Check Engine
- An amber telltale lamp indicating MIL Engine Emissions System Malfunction
- A red telltale lamp indicating Stop Engine
- A tachometer gauge with 0-3,000 RPM

The right-hand side information center shall include:

- A gauge to display the engine oil pressure with high and low-level indicators and stop engine alarm
- A fuel level gauge with a low fuel indicator and alarm
- An LED bar displaying 4 stages of the level for the Diesel Exhaust Fluid (DEF) with a refill indicator
- A voltage gauge with low voltage indicator
- A water temperature gauge with high water temp indicator and alarm

The left-hand side information center shall include:

- A primary air PSI gauge including low air and high air warning displays
- A secondary air PSI gauge with low and high air warning indication

An LCD diagnostic display, located in the left-hand side information center shall include digital readouts for the following:

- Odometer

- Transmission oil temp
- Engine oil temp
- Speedometer
- Engine hours
- Engine and transmission code
- Exhaust temp
- Engine coolant temp
- Engine oil PSI
- Turbo boost PSI
- Primary air pressure
- Secondary air pressure
- Engine load %
- Engine torque
- Battery volts
- Fuel level %
- Vehicle speed
- RPM
- DEF level
- Instant fuel economy
- Average fuel economy
- Engine hours
- Capable to record three trips, each shall be include:
    - Trip distance
    - Fuel economy
    - Fuel used
    - Idle fuel used
- The LCD screen shall also provide diagnostic capability

To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located below the middle information center. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols. The following indicator lamps shall be located on the Telltale panel:

BLUE Indicator Lights

- High Beam Headlight

GREEN Indicator Lights

- Right Turn Indicator
- Left Turn Indicator
- Battery On (Always On)

YELLOW Indicator Lights

- Particle Filter Regeneration (DPF)
- Regeneration Inhibit (Switch Engaged)
- Air Intake Restriction
- High Exhaust System Temperature (HEST)
- Wait to Start (when applicable)
- ATC (Automatic Traction Control) (when applicable)
- Water in Fuel

RED Indicator Lights

- Low Engine Coolant Level
- Air Bag Warning (when applicable)
- Check Transmission
- High Transmission Temperature
- ABS
- Parking Brake

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Alarm silence: Any active audible alarm will be able to be silenced with a button on the right side of the LCD screen.

INDICATOR LAMP AND ALARM PROVE-OUT

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

DIAGNOSTIC PANEL

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

- Engine diagnostic port
- V-Mux USB diagnostic port (when applicable)
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- Diesel particulate filter regeneration switch (when applicable)

- Diesel particulate filter regeneration inhibit switch (when applicable)

The enclosed diagnostic panel, accessible through the HVAC access panel shall include:

- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (when applicable)

BACKLIGHTING COLOR

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

BATTERIES

The single start electrical system shall include six (6) group 31 1000 CCA batteries.

The batteries shall feature:

- A 200-minute reserve capacity
- 4/0 dual path starter cables per SAE J541
- Heat shrink and sealant encapsulated ends on the cables
- Maintenance free

BATTERY COMPARTMENTS

A well ventilated, hot dipped galvanized battery storage compartment shall house the batteries on the officer and driver side of the chassis and shall be located to offer easy access to the batteries when the cab is tilted.

Each battery compartment shall feature:

- Hot dipped galvanized 3/16" steel construction.
- A complete floor of heavy duty, industrial grade, recycled Turtle Tile brand interlocking matting
- A double hinged hot dipped galvanized steel cover with two (2) rubber latches shall be utilized providing easy access to the batteries. No tools shall be required to gain access to the batteries.
- When in the open position, the double hinged door shall be flush with the bottom of the battery compartment, allowing for a sweep out style floor and removal of the batteries when necessary, without the inference of a lower lip. No Exceptions.

BATTERY CABLES

The starting system shall include cables which shall be protected by a 275-degree F, minimum high temperature flame retardant loom.

The cables shall be in a loom to help keep out dirt, dust, and debris.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs.

These studs shall be located in the forward most portion of the driver's side lower step.

The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a marine grade two position switch, of which shall be mounted on the left side of the steering wheel adjacent to the driver's knee.

A push button type starter button shall be provided on the driver dash to the left of the steering wheel.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

POWER & GROUND STUD

An electrical distribution panel shall include two (2) power studs. The studs shall be a minimum of 1/4" and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) 1/4" ground stud.

GROUND LIGHTS

Each door shall include a Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the cab step below each door.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

GROUND LIGHT ACTIVATION

The ground lights shall activate when the park brake is engaged.

CAB STEP LIGHTING

One (1) LED light shall be mounted to the riser of the middle cab step, a total of eight (8) step lights for the cab, in accordance with NFPA.

Each light shall include a polycarbonate lens and shall be contained in a housing which is vibration welded with a bulb which shall be shock mounted. Each step light shall not be any larger than 3" in diameter.

STEP LIGHT ACTIVATION

The step lighting shall be activated by opening any of the cab doors on the respective side.

ENGINE COMPARTMENT LIGHTING

Two (2) LED lights shall be mounted to the engine compartment in such a fashion as to provide as much light as possible to the engine compartment area. The engine compartment lighting shall activate with the tilting of the cab.

INTERIOR OVERHEAD CAB LED LIGHTING

Each cab door shall include a dual red and white LED lamp. There shall be one (1) light centered over each of the Driver and Officer's seat and one centered over each crew door.

The clear lamp shall illuminate with the opening of each respective door with both the red and clear portions of the lamp activated by individual lighted switches on each lamp.

ROOF TOP SPOTLIGHT

One (1) GoLight Model 20204 (white) LED spotlight with wired dash-mount remote shall be installed on the officer's side cab roof.

- Go-Light Mount Officer Side - 8-11"

ROOF TOP SPOTLIGHT

One (1) GoLight Model 20204 (white) LED spotlight with wired dash-mount remote shall be installed on the driver's side cab roof.

- Go-Light Mount Driver Side - 8-11"

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red Whelen round LED light with a red lens clearly labeled "Do Not Move Apparatus".

The flashing red light shall be 3.00-inches in diameter and shall be located centered left to right for greatest visibility.

The light shall be interlocked for activation when either a cab door is not firmly closed, or an apparatus compartment door is not closed, and the parking brake is released.

BACK-UP ALARM

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

HAAS ALERT / HA-5

R2V (Responder-to-Vehicle) with HAAS ALERT R2R (Responder-to-Responder) Capability
HAAS Alert Model Number "HA-5" shall be provided.

The device shall: be constructed of high strength, impact resistant, RoHS compliant ASA Plastic; have IP65 ingress protection; include a cellular modem that connects to commercially available cellular networks to transmit and receive data to/from the HAAS Alert Safety Cloud™ and include a cellular network data plan that shall; send vehicle GPS location, speed, course, acceleration, and emergency lights status (e.g., "on" or "off") to the HAAS Alert Safety Cloud every two (2) seconds while the vehicle is moving with e-master activated; send changes in the emergency lights status to the HAAS Alert Safety Cloud; be connected to the E-Master or emergency lights master via a minimum of 22-gauge wire; be connected to the vehicle's main battery via a minimum of 20-gauge wire so that it receives constant power; be connected to the vehicle's ground via a minimum of 20-gauge wire; have a parasitic shut off that turns off the device when the vehicle's battery voltage falls below 12V; be mounted inside the cab on the dashboard, within 10 feet of the officer's seat and with a clear view of the sky. The device shall be upgradeable to other communication technologies such as, at minimum; 5G, 5.9 band, and FirstNet.

The device shall utilize the HAAS Alert Safety Cloud to send digital R2V (Responder-to-Vehicle) alerts to nearby civilian drivers via in-dash infotainment and IVI (In-vehicle Infotainment) units, Waze and other popular consumer navigation applications when the vehicle is en-route with emergency lights engaged; utilize the HAAS Alert Safety Cloud to send digital R2V alerts to nearby civilian drivers via in-dash infotainment and IVI (In-vehicle Infotainment) units, Waze and other popular consumer navigation applications when the vehicle is on-scene with emergency lights engaged; has the ability to utilize the HAAS Alert Safety Cloud to receive digital R2R (Responder-to-Responder) alerts when the vehicle is en-route with emergency lights engaged and other responding emergency vehicles are in close proximity; have a port that connects to a compatible peripheral device to communicate R2R alerts to vehicle passengers. The device shall be able to communicate across all manufacturer brands.

The device shall have a companion, password-protected, web-based dashboard that provides authorized users with a map-based visualization of real-time vehicle location, emergency response status (i.e., "responding", "on-scene", "ready", "offline") with the ability for expanded attribution, vehicle speed and course, vehicle time-to-scene information, and vehicle time-on-scene information.

- Dimensions – Length, Width, Height (Inches): 5.4" x 2.7" x 1.3"

- Input Voltage - Power: 12.5V to 15V
- Input Voltage - Lights Indicator: 12V to 15V
- Amperage: 120 mA peak draw
- Operating Temperature Range: -40°C to 85°C
- Weight (Ounces): 7 oz.
- HAAS - 5 Year Subscription

AERIAL INTERFACE

Includes:

- (3) 2 gauge Batteries cables, 2 red & 1 black - ran down driver's side from forward cross member to extend 5 ft beyond frame - cap both ends

- ¼" fuel line loop from fuel tank aux pick up to aux return down the driver side to the first cross member behind the cab with an additional 10 ft of hose. Mark hose with a sticker to indicate which side of loop is for pick up and return

- Arrow Stick Harness from Dash to extend 10 ft beyond end of frame rails

- White wires 1-11 and 1 Red wire

- (2) Pieces of ¼" airline to run down the driver side from behind the cab to extend 10 ft beyond the frame rails.

- J1939 Wire from rear of cab to extend 10 ft beyond frame rails

- V-Mux Wire from rear of cab to extend 10 ft beyond frame rails

- Additional Clean Ground Wire from rear of cab to extend 10 ft beyond frame rails for V-Mux

- 360° Camera System

- 360° Camera System with VMUX

FRC inView 360 Camera System

The **inView 360™** provides the driver with split screen view. The bird's-eye view is always visible providing a 360 view around the apparatus. This unique view allows the operator to see pedestrians and obstacles in close proximity to the apparatus. The second view on the display switches between front/left/right/rear views depending on the operational conditions. The system is networked between the turn signals, and vehicle reverse so the screen automatically switches to left, right, and rear viewing when turning or backing up.

BATTERY CHARGER

- Kussmaul Charger 091-216-40/20
- Display 091-194-IND-WT-XX
- Auto Pump 091-9HP
- Super Auto Eject 091-55-20-120-YW

CHARGER LOCATION

The battery Charger shall be located on top of the EMS compartment located behind the officer's seat.

AUX. AIR COMPRESSOR LOCATION

The auxiliary air compressor shall be located behind the officer's seat.

EJECTION UNIT

A Kussmaul Super Auto Eject 20-amp 120-volt shore power assembly, cover, solenoid input wire, power cord, and plug shall be installed. The 12-volt solenoid shall eject the shore power cord away from vehicle path upon sensing engine start, after ejection, the weatherproof cover snaps into position over inlet. The unit shall sequence energizing of an Auto Eject, eliminating terminal arching when connecting and disconnecting power cord.

The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination. A pre-wired 3-foot AC electrical cord and starting sense wire (side wired) shall be installed.

The assembly shall have the following dimensions: 6.17" high x 4.08" wide x 2.8" deep with 4 lb. weight.

There shall be a Kussmaul 20-amp super auto eject with yellow cover supplied.

SHORELINE LOCATION

The shoreline shall be located in the driver's front stepwell.

Please Specify Location

The Battery Charger indicator shall be located in the canopy window.

APPARATUS WARNING PROVISIONS SPECIFICATIONS

ELECTRIC SIREN AND CONTROL

One (1) Whelen Cen Com model #C399 control and a CCTL6 Control head shall be provided.

- Mount the microphone same as 14298 on top of center upper havis

SPEAKER

One (1) Federal Signal DynaMax 100-watt speaker, Model #ES100C, shall be installed. The speaker shall feature a Neodymium driver and a high strength composite housing that is chemical resistant and maintains rigidity at high temperatures.

SPEAKER

One (1) stainless steel grille shall be installed on the speaker.

SPEAKER LOCATION

The siren speaker shall be installed on the apparatus bumper extension, as determined by the body manufacturer.

Match the previous built unit, Officer side.

FEDERAL MECHANICAL SIREN

One (1) Federal Signal Q2B mechanical siren, model Q2B-012NNSD, shall be fully recess mounted into the left side of the front bumper. The grille will be outside the bumper. The "Q" siren shall feature a highly polished chrome body and grille. The siren's distinctive mechanical wail sound shall produce 123 db. at 10'. The siren control switch(es) shall be installed in the cab.

- q2b is to fully recess on the left side of front bumper

Mounting shall also have a switch (manual breaker) to disable the siren Reference Stinger circuit breaker SGP90200 or equivalent. The location shall be under the bumper next to the siren.

SIREN CONTROL

One (1) foot switch shall be provided on the driver's side of the cab floor to activate the Federal Signal Q2B siren.

- Foot switch shall be on a 15-degree angled flange to match previous Sparks units. This will also incorporate the air horn foot switch

SIREN BRAKE

One (1) push button siren brake to silence the Federal Signal Q2B siren shall be provided on the driver's side dash.

LIGHTBAR

One (1) Whelen Ultra Freedom IV light bar shall be included with the apparatus cab. The light bar shall be a model F4N7QLED and shall be mounted on the roof of the cab, towards the front, above the windshield.

The light bar shall feature:

- A 72" light bar designed for high performance
- Two (2) red Linear Super LED corner modules
- Two (2) red 400 series Linear Super LED endcap lights
- Two (2) red 400 series Linear Super LED lights
- Two (2) white 400 series Linear Super LED lights with clear optic lenses
- Clear hard coated lenses to provide extended life/luster protection against UV & chemical stresses
- Designed in accordance with NFPA Zone A requirements

TRAFFIC LIGHT CONTROL

One (1) Global Traffic Technologies Opticom 792HM Multimode Strobe high-priority traffic light emitter and control device shall be installed on the apparatus cab roof. The traffic emitter shall be wired thru the park brake to deactivate when the park brake is set.

LIGHTBAR ACTIVATION

The front upper light bar shall be activated through the master warning switch.

"WHITE LIGHT" DISABLE SWITCH

There shall be a rocker switch provided in the emergency switch panel labeled "WHITE LIGHT DISABLE". The switch shall break the power circuit to the white Zone "A" traffic clearing lights in the lightbar and grille. This shall minimize the blinding effect to the driver operating the lights in either fog or snow conditions. The switch shall illuminate to indicate that the white lights "are" disabled.

UPPER REAR WARNING LIGHTS

One (1) pair of Whelen halogen rotary warning lights shall be installed on the upper corners of the rear body. The unit shall have dual rotators with total dimensions of 7" high x 8" deep.

The driver side warning light shall be a Whelen rotator, model RB6TRP with a red lens.

The officer side warning light shall be a Whelen rotator, model RB6TRP with a red lens.

REAR WARNING LIGHT MOUNTING

The upper rear lights shall be mounted on cast aluminum stanchions attached to the apparatus body, one on each side.

UPPER WING FRONT WARNING LIGHTS

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab upper wing area. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LEDTM with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LEDTM with color lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

INBOARD WARNING LIGHTS

One (1) pair of Whelen model 6RB Rota-Beam LED warning lights shall be installed, one each side, on the front of the chassis cab, in the inboard warning light position. The dimensions of the lights shall be 4-3/16" x 6-9/16".

The driver side warning light shall be a Whelen Model 6RBRC red-LED with clear lens.

The officer side warning light shall be a Whelen Model 6RBRC red-LED with clear lens.

INTERSECTION WARNING LIGHTS

One (1) pair of Whelen model M6 LED warning lights shall be installed one each side of the chassis cab. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

LOWER MID CHASSIS WARNING LIGHTS

One (1) pair of Whelen model M6 LED warning lights shall be installed one each side of the chassis cab, above the chassis wheels. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

LOWER MID-BODY WARNING LIGHTS

One (1) pair of Whelen model M2 LED warning lights, model M2WR, shall be installed, one each side of the apparatus, mid-body in the rub rail. The dimensions of the lights shall be 4-1/4" x 2-11/16".

Will only fit in EXT rub rail WITHOUT bezel.

The driver side warning light shall be a Whelen Model M2WRC wide-angle red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M2WRC wide-angle red Super-LEDTM with clear lens.

LOWER REAR SIDE WARNING LIGHTS

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side of the apparatus body, towards the rear of the body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

There shall be cast aluminum step light housing provided for the warning lights. The housing shall have a pyramid tread on the top of the housing.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

LOWER REAR WARNING LIGHTS

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side on the lower rear of the apparatus body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6R red Super-LEDTM with color lens.

The officer side warning light shall be a Whelen Model M6R red Super-LEDTM with color lens.

APPARATUS 12-VOLT ELECTRICAL SPECIFICATIONS

LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS

The following specifications describe the low voltage electrical system on the specified rescue fire apparatus. The electrical system shall include all panels, electrical components, switches, and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA 1901 standards.

The apparatus shall have a Weldon V-MUX multiplexing system, to provide diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The electrical system shall be pre-wired for computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics, troubleshooting, or program additions. There shall be a diagnostic display provided in the cab. The multiplexed system shall use twisted pair shielded wire within the electrical system for noise reduction. The diagnostic display shall allow for fault and condition messages to be displayed. For superior system integrity, the networked system shall meet the following minimum requirement components:

- Power management center
- Load shedding power management
- Solid-state circuitry
- Switch input capability
- Responsible for lighting device activation
- Self-contained diagnostic indicators
- Power distribution module
- Diagnostic display for warning message indication
- High Idle Function

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the protected circuit. Voltage drops in all wiring from the power source to the device shall not exceed 10 percent. The wiring, wiring harness and insulation shall be in conformance to applicable SAE J-1128 with GXL temperature properties and NFPA standards. All exposed wiring shall be protected in a loom with a minimum temperature rating of 289 degrees Fahrenheit. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

The wiring between the cab and body shall be joined using Deutsche type connectors or in an enclosed terminal junction panel. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris such as grease and

road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

Any electrical junction or terminal boxes shall be weather resistant and located away from direct water spray. In addition, the main body junction panel shall house the automatically reset breakers and relays as required.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in an electrical junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants, and damage. Wiring shall be uniquely identified at least every two feet (2') by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of the applicable NFPA 1901 standards.

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

The electrical system shall include the following:

- Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
- The electrical wiring shall be harnessed or be placed in a protective loom.
- Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate.
- A coil of wire must be provided behind each electrical appliance to allow them to be pulled away from the mounting area for inspection and service work.
- All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights added over the minimum requirement level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. Rocker type warning light switches shall be utilized. For ease of nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized.

All switches shall be appropriately identified as to their function.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and "call for the right of way". When the parking brake is applied, a "blocking right of

way" system shall be automatically activated per requirements of the NFPA 1901 standard. All "clear" warning lights shall be automatically turned off upon application of the parking brake.

NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with the delivery documentation per requirements of the NFPA 1901 standard. The following minimum testing shall be completed by the apparatus manufacturer:

Reserve capacity test:

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

Alternator performance test at idle:

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

Alternator performance test at full load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA 1901 standard, or a system voltage of less than 11.7 volts dc for a 12-volt system is present for more than 120 seconds, the test shall be considered a failure.

Low voltage alarm test:

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12-volt system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

NFPA REQUIRED DOCUMENTATION

The following documentation shall be provided on delivery of the apparatus:

- Documentation of the electrical system performance tests required above.
- A written load analysis, including:

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

COMPARTMENT DOOR OPEN SYSTEM ON VISTA SCREEN

The cab and body main compartment doors shall be wired to illuminate an open-door indicator on the Weldon V-MUX Vista screen located in the cab when the parking brake is released. The indicator shall individually specify the door(s) that is(are) open.

BATTERY SYSTEM

The battery system shall be supplied with the chassis.

MASTER ELECTRIC SWITCH

One (1) battery disconnect switch shall be located conveniently to the driver of the apparatus. The switch shall disconnect the 12-volt power supply from the battery system.

AIR HORNS

Two (2) Grover brand Stutter Tone air horns shall be mounted to the bumper. The air horns shall be 6" in diameter and 21" long. Each horn shall feature flared ends of the horn offering a pleasing appearance.

AIR HORN LOCATION

The air horns shall be located on the front bumper. One (1) shall be mounted outboard on the driver side and one (1) outboard on the officer side, so as not to interfere with any other components on the bumper.

AIR HORN FOOT SWITCH

One (1) foot switch shall be installed to activate the air horn system on the driver's side of the floor.

The foot switch shall be mounted on the same flange as the Q2B foot switch.

AIR HORN SWITCH

One (1) switch shall be installed to activate the air horn system on the officer's side of the cab dash.

Black, rubber covered push-button switch.

The location for the dash button is, center dash, outboard towards the officer side next to Havis,

12 VOLT POWER SOURCE

One (1) 12-volt power and ground connection rated at 20 amps shall be provided.

The 12V power and ground will need to be supplied to behind the officer seat area.

MUST BE CLEAN POWER/GROUND.

Note: All the 12v power, grounds, receptacles match previous units, job number 14533

The power source shall be "constant hot" and remain active regardless of the position of the master battery switch.

12 VOLT POWER SOURCES

Two (2) 12-volt power and ground connection rated at 20 amps shall be provided in the center console in the chassis cab.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

12 VOLT POWER SOURCES

One (1) 12-volt power and ground connection rated at 30 amps shall be provided on the apparatus for the installation of a mobile two-way radio.

The power source shall be "constant hot" and remain active regardless of the position of the master battery switch.

12 VOLT POWER SOURCES

One (1) 12-volt power and ground connection rated at 30 amps shall be provided in the rear cabinet of the chassis cab.

12-volt cigarette lighter style power connections rated at 15 amps shall be provided at the rear of the engine doghouse. The power points shall be recessed and rear facing between the two drawers in the module behind the center Havis console. One (1) cigarette style and one (1) dual USB.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

PUMP ENCLOSURE LIGHTS

Two (2) LED work light shall be provided in the pump enclosure.

The control switch shall be mounted on the light head.

LIGHT MOUNTING LOCATION

The mounting location for the specified light shall be on the front edge of the chassis cab roof.

LED SCENE LIGHT

Fire Research Spectra Max LED Floodlight model SPA800-Q28 contour roof mount light shall be installed. The mounting brackets shall attach to the bottom of the lamphead and be machined to conform to the roof radius.

Wiring shall extend from a weatherproof strain relief at the rear of the lamphead.

The lamphead shall have 84 ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spotlight beam pattern. It shall operate at 12/24 volts DC, draw 19.2/9.6 amps, and generate 28,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance. The lamphead shall be no more than 5 7/8" high by 14" wide. The lamphead and mounting bracket shall be powder coated. The LED scene light shall be for fire service use.

SCENE LIGHT SWITCHING

The two (2) front scene light(s) shall activate via a virtual scene light switch located on the driver's and officer's Vista screens.

PORTABLE LANTERN

The Pelican lighting shall be mounted in the same locations as 14298-99 One (1) doghouse mounted Officer's side and One (1) On top of the drawer assembly.

Powered when ignition is on or plugged in to shore power.

PORTABLE LANTERN, p/n 45670

One (1) Streamlight "Vulcan" LED portable handlight shall be installed, p/n 45670. The lantern shall include a mounting bracket, with 12-volt charger wired to the battery system to allow the light to recharge when not in use.

Powered when ignition is on or plugged in to shore power.

Power Receptacle Provision shall be located in the forward wall or L2 extrusion 8" above the floor.

HANDLIGHT INSTALLATION

The location of the handlight installation shall be in the chassis cab. All components shall be installed as directed by the fire department.

INTERCOM SYSTEM

The vehicle shall be equipped with a FireCom 5200D intercom master station. The system comes standard with connections for up to eight (8) positions. Additional positions can be added through daisy chaining or wireless transmitters.

This system has the ability to operate with two (2) mobile radios/devices. Connection of this system to the mobile radio is not included, unless specified.

HEADSET HANGER HOOK

Four (4) headset hanger hooks shall be provided and installed in the cab for storage of the headsets while not in use.

INTERCOM HEADSET

Two (2) UHW505 Wireless Headset plus wireless base station with single channel transmitter for each headset shall be provided with the intercom system. The raised PTT buttons on either side activate the radio transmit function. The mic is always live for intercom communication. Appropriate for driver or officer positions.

INTERCOM HEADSET

Two (2) UHW503 Wireless Headset(s) plus wireless base station with single channel transmitter for each headset shall be provided with the intercom system. Appropriate for crew positions. The headsets shall come in standard black. Adjustable Listen Through Microphones allow for face-to-face discussion without removing the ear cuffs, and Wideband audio enhancement provide clarity in all environments.

WIRELESS BASE STATION

One (1) five (5) channel Transmit Wireless Base Station that supports (5) positions that can either be PTT or crew listen. The 505R can support up to 5 PTT headsets, or any combination thereof. More than five positions will require another base station.

RADIO ANTENNA BASE

Three (3) radio antenna base shall be supplied and installed on the apparatus, the antenna coax terminating in the cab. The location shall be determined by the customer.

Antennas will be for an 800 MHz radio, a VHF radio and a 5 in 1 GPS & data antenna.

The 5 n1 GPS/WIFI will be mounted on the raised section of the cab roof 1nboard with 20" room between antennas.

Terminate at the radio, computer area above the officer EMS.

The 800 MHZ is to install in the upper area of the roof, terminate at the radio/ computer area above the officer EMS.

RADIO

Two (2) fire radio shall be supplied by the customer and installed on the apparatus. The location shall be determined by the customer.

The radios are to be located in center Havis on officer side, match 14298-99

Harris 800 MHz Mobile Radio and a VHF (must confirm brand) Mobile Radio. Constant power to main body, head unit is on battery switch.

Including Interface cables to Firecom 5200D

12 VOLT POWER SOURCES

Two (2) 12-volt power and ground connection rated at 30 amps shall be provided on the apparatus for the installation of a mobile two-way radio.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

RADIO SPEAKER

One (1) fire radio speaker shall be supplied by the customer and installed on the apparatus. The location shall be determined by the customer.

Mount speakers on centered on overhead panel between the EMs cabinets, match 14533.

RADIO

One (1) fire radio remote head shall be supplied by the customer and installed on the apparatus. The location shall be determined by the customer.

Constant power to main body, head unit is on battery switch.

Customer Supplied TIC Camera

A customer supplied TIC will be installed. The final mounting location will be determined at MPI.

Powered when ignition is on or plugged in to shore power.

NIEDERMANN TRANSMITTER PRE-WIRE

The Nederman wireless transmitter will not be supplied, provide 15a Ignition power only to the area behind the dash coiled up and labeled (15AMP Nederman wireless trans)

KNOX BOX

One (1) KeySecure Series master key box shall be supplied by the customer and installed. The location shall be determined by the customer.

The Knox box is to be located on the Havis console, towards the driver's side. The mounting location is the driver side lower cubby, this location matches 14298-99

Powered when ignition is on or plugged in to shore power.

CUSTOMER SUPPLIED 911 COMPUTER SYSTEM

Mounting plate for the data 911 monitor. The monitor will be mounted to the top of the officer's side dash mounted flush to the top of the dash and at the same angle of the dash.

Clarify: the computer for the 911 data monitor is to be mounted on top of the officer's side EMS cabinet.

Mounting tray for the 911 Data keyboard. Mounted on the officer's side of the next to the Havis on top of the doghouse.

Install customer supplied 911 computer system.

Computer/MDC (Data 911.M8 w/ 15" monitor) Max Power consumption: < 30 Amps. Needs constant 24/7 power. Momentary drops in voltage does not work with the MDC when switching thru a relay or turning a switch for battery/shore power.

The USB cable from the keyboard will need to be extended from the computer to the keyboard.

The display will be mounted in the glove box area with the FD supplied RAM mounts.

The computer for the 911 data monitor is to be mounted rearward of the officer seat.

Mounting tray for the 911 Data keyboard. Mounted on the officer's side of the next to the Havis on top of the doghouse.

(Need more information from customer with exact specs at precon)

MARKER LIGHTS

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements.

LICENSE PLATE BRACKET

One (1) Cast Products license plate bracket, model LP0005-1-C shall be provided at the rear of the apparatus. The bracket shall have a polished finish and LED light.

TAILLIGHTS

One (1) pair of Whelen M6 LED tail/brake lights shall be provided. The rectangular 4"x6" lights shall be red.

TURN SIGNALS

One (1) pair of Whelen M6 LED turn signals with populated sequential chevron arrow shall be provided.

BACKUP LIGHTS

One (1) pair of Whelen Series M6 LED backup lights shall be installed on the rear of the apparatus body. The dimensions shall be 4" x 6", and the lens color shall be clear.

FOUR LIGHT HOUSING

One (1) pair of chrome plated taillight housings shall be supplied. Each housing shall be designed to hold four (4) Whelen M6 rear lights located at the lower rear corners of the body.

MID BODY LED TURN SIGNALS

One (1) pair of mid body LED turn signals shall be provided. The location of the turn lights shall be at mid-body near the rear wheel axle.

GROUND LIGHTS

There shall be two (2), one each side, Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the rub rail of the pump house.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

The ground lighting shall be activated when the parking brake is set.

GROUND LIGHTS

There shall be two (2), one each side, Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the rub rail, mid body.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

The ground lighting shall be activated when the parking brake is set.

GROUND LIGHTS

There shall be two (2) Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the rear step.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

The ground lighting shall be activated when the parking brake is set.

GROUND LIGHTS

There shall be two (2) Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the compartments, behind the rear wheels.

Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

The ground lighting shall be activated when the parking brake is set.

The ground lights shall automatically activate when the parking brake is applied.

STEP LIGHT

One (1) LED step light(s) with clear lens shall be installed.

REAR TAILBOARD LIGHTS

One (1) LED step lights with clear lens shall be installed to illuminate the step surfaces at the rear of the apparatus body.

The step/walkway light switch shall be installed and wired to the parking brake.

SCENE LIGHT

Two (2) Whelen M9 Series Model # M9LZC scene light(s) shall be provided. The steady burn scene light shall incorporate Linear Super-LED® and Smart LED® technology.

The M9LZC shall be furnished with a chrome trim ring, a rubber gasket, screws, and screw grommets for installation. The M9LZC shall have the ability to be installed as a surface mount scene light.

- Voltage: +12v
- Size: H=6.51", W=10.34", D=1.892"
- Amp Draw: 6.0 Amps
- Lens Color: Clear

SCENE LIGHT LOCATION

One (1) scene light shall be located on the left side of the cab.

SCENE LIGHT LOCATION

One (1) scene light shall be located on the right side of the cab.

SCENE LIGHT SWITCHING

The one (1) left side scene light(s) shall activate via a virtual scene light switch located on the driver's and officer's Vista screen and by a switch on the pump panel. The switching shall be wired to operate in a three-way configuration to allow the light(s) to be controlled from either location regardless of switch position. The switches shall be labeled "LEFT SCENE".

The switch shall control the side cab and side body lights.

SCENE LIGHT SWITCHING

The one (1) right side scene light(s) shall activate via a virtual scene light switch located on the driver's and officer's Vista screen and by a switch on the pump panel. The switching shall be wired to operate in a three-way configuration to allow the light(s) to be controlled from either location regardless of switch position. The switches shall be labeled "RIGHT SCENE".

The switch shall control the side cab and side body lights.

LED SURFACE MOUNT SCENE LIGHT

Three (3) Fire Research model SPA260-Q20 surface mount light shall be installed. The light shall be mounted with four (4) screws to a flat surface. It shall be 5-7/8" high by 14.5" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from a weatherproof strain relief at the rear of the light.

The lamphead shall have sixty (60) ultra-bright white LEDs, 56 for flood lighting and 4 to provide a spotlight beam pattern. It shall operate at 12/24 volts DC, draw 13.8/6.9 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance. The lamphead shall be powder coated. The LED scene light shall be for fire service use. The light housing shall be powder coated with a chrome-colored bezel.

SCENE LIGHT LOCATION

One (1) scene light shall be located on the left side of the apparatus body.

The scene light shall be installed on a treadplate mounting plate.

SCENE LIGHT LOCATION

One (1) scene light shall be located on the right side of the apparatus body.

The scene light shall be installed on a treadplate mounting plate.

SCENE LIGHT LOCATION

One (1) scene light shall be located on the rear of the apparatus body.

SCENE LIGHT SWITCHING

The one (1) rear scene light(s) shall activate via a virtual scene light switch located on the driver's and officer's Vista screen and by a switch on the rear of body. The switching shall be wired to operate in a three-way configuration to allow the light(s) to be controlled from either location regardless of switch position. The switches shall be labeled "REAR SCENE".

There shall also be a switch at the rear of the truck. Mounted driver side above the DOT bezel.

TRAFFIC ARROW LIGHT

One (1) Whelen Model #TAM65 Traffic Advisor shall be installed. The light shall be equipped with six (6) 500 Series TIR6™ Super-LED lights in a low-profile flat style lamps measuring 36" (91cm) in length. The unit shall be mounted at the rear of the apparatus body. The Traffic Advisor control head shall be mounted inside the cab and be accessible by the driver and officer.

The traffic arrow light shall be surface mounted at the rear of the apparatus body.

APPARATUS CHASSIS MODIFICATIONS SPECIFICATIONS

FLUID DATA PLAQUE

One (1) fluid data plaque containing required information shall be provided based on the applicable components for this apparatus, compliant with NFPA Standards:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Drive axle lubricant
- Power steering fluid
- Pump transmission lubrication fluid
- Other NFPA applicable fluid levels or data as required

Location shall be in the driver's compartment or on driver's door.

DATA & WARNING LABELS

A highly visible label indicating the overall height, length, and weight of the vehicle shall be installed in the cab dash area.

NO RIDE LABEL

One (1) "NO RIDERS" label shall be applied on the vehicle at the rear step area or other applicable areas. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion is prohibited.

TIRE PRESSURE LABEL

A label shall be placed in a visible area that indicates the front and rear tire pressure.

CAB SEATING POSITION LIMITS

One (1) label shall be installed in the cab to indicate seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

HELMET WARNING TAG

One (1) label shall be installed in the cab, visible from each seating position. The label shall read "CAUTION: DO NOT WEAR HELMET WHILE SEATED." Helmets must be properly stowed while the vehicle is in motion according to the current edition of NFPA 1901.

REAR TOW EYES

There shall be two (2) tow eyes furnished at the rear of the body. The tow eyes shall be accessible above the rear tailboard. The tow eyes shall be constructed of 3/4" plate steel with a 3" I.D. hole, large enough for passing through a tow chain end hook.

The tow plates shall be painted black.

BUMPER

The chassis shall feature a heavy-duty bumper constructed from ASTM A36, 1/4" thick steel and painted primary job color. The bumper shall be 12" high by 102" wide with two-inch (2") flanges and chamfered corners.

Integral heavy duty steel bumper "wings" shall extend from the bumper to the cab.

The bumper shall be mounted to an eighteen inch (18") long chassis frame extension.

A contoured apron / gravel shield fabricated from NFPA compliant, slip-resistant polished aluminum shall enclose the area between the bumper and the cab.

FRONT BUMPER HOSEWELL

One (1) recessed full width hose well compartment constructed from smooth aluminum shall be installed in the front bumper extension. The hose well shall be constructed with "angled" ends.

Water drain holes shall be drilled in the bottom.

Full Width Storage in bumper.

COMPARTMENT MATTING

The bumper compartment floors shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking units, 12 x 12 square by 3/4" thick. This material shall be resistant to temperature, ultra-violet radiation, mechanical impacts, chemical actions, and corrosion free.

BUMPER COMPARTMENT DOOR

The front bumper compartment shall be equipped with a raised aluminum treadplate door for the full width of the compartment.

BUMPER COMPARTMENT LIGHT

One (1) AMDOR H20 horizontally mounted LED door light shall be installed in the bumper compartment.

The light shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The light shall activate automatically when the compartment door is opened. The light switch shall activate the "Do Not Move Apparatus" warning light in the cab indicating that the bumper compartment door is not secure.

TOW HOOKS

Two (2) tow hooks shall be mounted to the bumper extension under the bumper towards the rearward section of the extension. The tow hooks shall be steel and shall be painted black.

TOW EYES

Two (2) 3" tow eyes shall be mounted to the bumper extension through the front face of the bumper. The tow eyes shall be heavy polished nickel-plated steel which shall not chip when used with chains and hooks.

TIRE AIR EQUALIZATION SYSTEM

A tire pressure equalization system for the tandem axle rear wheels shall be provided on the apparatus.

- Crossfire System

REAR MUD FLAPS

One (1) pair of black mud flaps shall be installed behind the rear wheels.

INTERIOR CABINETS

See Photos in file.

The cabinet's exterior finish shall match the interior finish of the chassis cab.

The cabinet's interior shall have a natural finish.

LATEX GLOVE BOX AND TWO (2) DRAWER MODULE

A module shall be provided and installed in the cab behind the Havis center console which shall include a latex glove box and two (2) drawer module.

This is the Sparks NV 2 drawer unit Mounted on top of the doghouse.

The cabinet's exterior finish shall match the interior finish of the chassis cab.

The cabinet's interior shall have a natural finish.

MAP BOOK POCKETS - CAB DOORS

Four (4) map book pockets shall be located at the lower portions of the chassis cab doors. Please see PDF

drawing for design and size.

MAP BOOK POCKETS - CAB DOORS

Four (4) map book pockets shall be located at the lower portions of the chassis cab doors. Please see PDF drawing for design and size. Confirm size at precon.

The cabinet's exterior finish shall match the interior finish of the chassis cab.

The map book pockets will match 14298-99.

The cabinet's interior shall have a natural finish.

CAB LIFT CONTROL LOCATION

The cab lift controls for tilting the cab shall be recess mounted in the forward wall inside the left front compartment or behind the pump compartment left side upper access (gauge) panel. Proper operation and warning labels shall be installed adjacent to the controls.

The connection for the cord shall be on the LHS pump panel.

The controller is to be stored in the cab.

AIR TANK DRAIN CABLE EXTENSION

Five (5) cable from the spring-loaded air tank drain shall be routed and attached to the outer edge of the apparatus for ease of access. The 1/8" braided steel cable shall allow accumulated moisture in the air brake system to be easily drained. The cable shall be installed so that maximum ground clearance is maintained.

REAR 4" AERIAL INLET

One (1) 4" rear inlet connection shall be installed to supply to the aerial device and piped with 4" steel pipe. The rear inlet shall have 4" NST male threads and a 4" NST rocker lug cap with cable or chain.

There shall be a 1-1/2" drain installed in the rear aerial supply line with control on the rear of the apparatus body.

A color-coded nameplate labels shall be provided at rear and on the pump panel control handle.

One (1) 4" NST rocker lug chrome plated vented cap and cable, or chain securement shall be provided.

APPARATUS BODY SPECIFICATIONS

TRANSVERSE COMPARTMENT

A separate enclosed, full body width, transverse compartment module shall be furnished to the rear of the chassis cab. This compartment is to be furnished with full height painted roll up door on each side of the module.

The floor of the transverse compartment shall extend from the running board level into the chassis frame, then up and over the frame rails providing a full width opening above the frame rail level.

50" to Match Stafford County Integral w/ Body.

A removable louvered vent shall be provided in the compartment.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

One (1) each side.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

250# TIP-DOWN TRAY

One (1) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

One (1) each side.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

COMPARTMENT LIGHTS

Two (2) 54" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 36 LEDs per light producing approximately 180 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

A removable louvered vent shall be provided in the compartment.

1000# ROLLOUT TRAY

One (1) SlideMaster SM3-SP Series mid profile telescoping equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 1,000 pounds. A tray constructed of .190" smooth aluminum plate with four 3" sides shall be mounted to the slide frame. The slide frame shall extend 100% allowing the tray to be completely accessible from outside the compartment. The slide shall have a 3-7/8" deck height.

An integrated manual quarter turn "gravity" lock shall hold tray in both the "in" and "out" positions. The "gravity lock" manually rotates a rod with a tab to engage the bottom frame.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

250# TIP-DOWN TRAY

One (1) SlideMaster SMT Series tip-down equipment tray(s) shall be installed that is(are) approximately half the depth of the body width. The tray assembly shall have a silver powder coated steel slide frame with sealed roller bearings rated to 250 pounds. A tray constructed of .190" smooth aluminum plate with four 4" sides shall be mounted to the slide frame. The slide frame shall extend out of the compartment while tipping downward to approximately 30 degrees when fully extended. An integrated manual quarter turn lock shall hold tray in the "in" position. Gravity shall hold the tray in the "out" position. The slide shall have a 2-5/8" deck height.

The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 1/2" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

COMPARTMENT LIGHTS

Two (2) 54" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 36 LEDs per light producing approximately 180 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

TANDEM AXLE REAR MOUNT AERIAL/PLATFORM BODY

A tandem axle rear mount aerial/platform body shall be provided and constructed as follows:

CHASSIS REQUIREMENTS FOR AERIAL APPARATUS

The following items shall be included with the chassis to operate the aerial device:

- Truck chassis with a selectable high idle system. High idle to be set at 1,200 rpm.
- A red warning light installed in the driving compartment and visible to the driver to indicate if any outrigger is not in the stowed position.
- There shall be a (hot shift) PTO system mounted to the chassis transmission. The PTO assembly shall supply power to the hydraulic pump for all aerial operations. Electrical safety wiring shall be installed that requires the transmission be in neutral, or the fire pump engaged, and the parking brake set before the PTO will operate.
- A PTO engaged indicator light shall be installed in the cab of the apparatus.

BODY BUILDER REQUIREMENTS FOR AERIAL APPARATUS

The following items shall be installed by the body builder for the aerial device:

- Outrigger plates to be installed on heavy aluminum brackets and installed adjacent to each outrigger.
- A preset relief valve capable of protecting the waterway system by relieving pressure through the dumping of water to the environment. Relief valve shall be plumbed to dump excess water below chassis frame. (N/A if the rear connection is an inlet only)
- A 1-1/2-inch minimum drain valve shall be installed at the low point of the waterway inlet system. Handle to operate drain valve shall be extended to rear of body.
- Reflective striping shall be installed on all stabilizers that protrude beyond the body of the apparatus.

- Warning signs for the aerial and outriggers shall be installed to meet the aerial manufacturer recommendations.

The following items are not required with the Smart Aerial application:

- A leveling bubble shall be installed on the rear of the truck, for side to side leveling.
- A leveling bubble shall be installed at the pump operator's panel, for front to rear leveling.
- There shall be a ladder alignment indicator provided on the turntable to indicate when the ladder is aligned with the travel support and may be lowered into it.

OUTRIGGER PAD STORAGE

Four (4) aluminum outrigger pad storage brackets capable of holding one (1) outrigger pad each shall be installed.

There shall be one storage bracket located adjacent to each outrigger in an easily accessible location.

SAFETY HARNESS

All NFPA required life safety harnesses shall be provided and mounted by the Customer before the apparatus is placed into service.

HEAVY DUTY EXTRUDED ALUMINUM BODY

To prevent possible interaction of dissimilar metals and to reduce the weight of the completed apparatus, the body and ALL STRUCTURAL SUPPORTS shall be constructed entirely of aluminum sheet and aluminum extrusions.

Aluminum extrusions or sheet aluminum of smaller thicknesses or lesser grades to those specified herein are not acceptable.

The aluminum extrusion alloy shall be 6061 with a temper rating of T6 and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32 and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum treadplate alloy shall be 3003 with a temper rating of H22 and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

All extrusions utilized in the body superstructure, substructure and framing shall be 6061-T6 alloy aluminum. All extrusions shall be beveled at each joint and all seams shall be electrically seam welded using #5356 alloy aluminum wire. For strength and rigidity, all aluminum sheets utilized in the apparatus body for structural support shall be a minimum of **3/16"** 5052-H32 alloy aluminum sheet.

FASTENERS

All fasteners use in the apparatus body shall be attached with Ny-Lok type fasteners.

All aluminum and stainless-steel components shall be attached using stainless steel fasteners. Zinc or cadmium plated fasteners are not acceptable for use with any aluminum or stainless-steel components on the vehicle.

Compartment door hinges, handrails and running boards shall be attached using a minimum of 1/4" diameter machine bolt fasteners. Fasteners used in nonstructural areas such as door handles, trim moldings, gauge mounting, etc. shall be 3/16" in diameter.

BODY SUPERSTRUCTURE CONSTRUCTION

All vertical and horizontal structural members of the outer apparatus body shall be constructed of no less than 4.00" by 12.00", 6061-T6 aluminum extrusions with a minimum .200" wall thickness fully welded together forming a unitized support system for the body and compartments. In order to provide a complete internal and integrated body super-structure, full height extruded structural members shall be provided at each corner of the apparatus and between each exterior equipment compartment.

EXTERIOR COMPARTMENT CONSTRUCTION

Compartment sides and walls shall be welded to the super-structure. Seams shall be sealed using an engineered grade polyurethane adhesive-sealant.

The compartments shall be designed to provide protected raceways for vertically hinged door fastener retention elements. This requirement shall eliminate the possibility of door hinge hardware from being damaged by or damaging equipment stored in the compartments.

The compartment door openings are to be full width of the compartment with no loss of space. The raceways shall be designed to allow door hardware removal by a single person with simple hand tools.

Full height access panels fastened with stainless steel fasteners shall be provided to access all wiring routed through vertical super-structure extrusions. There shall be no exposed wiring allowed within the compartment interiors.

Compartment flooring shall be constructed of a combination aluminum extrusion and aluminum treadplate welded in place to the extruded aluminum framework creating a double compartment floor for added strength. Due to the high usage and wear and tear caused by removal of equipment, only treadplate aluminum with a raised pattern will be acceptable for compartment flooring. Bolted or welded in smooth raw aluminum or painted aluminum does not meet the intent nor technical requirement of raised pattern treadplate.

The tops of the side exterior compartments shall be constructed of NFPA #1901 Standards compliant non-slip polished aluminum treadplate fastened to the body with stainless steel fasteners. Compartment tops that are welded in place do not meet the serviceability intent of this requirement.

SHELVING TRACKS

The vertical extrusions forming the framework of the side exterior compartmentation shall be designed to incorporate FULLY RECESSED adjustable shelving standards. Shelving tracks shall run full height of **ALL** side exterior equipment compartment.

The intent of this requirement is to allow full use of the available storage areas without the interference of shelving tracks extending into and reducing the interior widths of the compartments which will allow equipment to be stored within the full width of the compartment interiors.

Shelving, when specified, shall have a width of no less than .50" of the overall compartment width.

Adjustable shelving tracks welded or bolted onto interior walls of the compartments do not meet the intent of these specifications.

HOSE BODY CONSTRUCTION

To maintain strength and rigidity, the main hose body shall be completely framed with a minimum of 2.00" X 3.00" 6061-T6 alloy aluminum extrusions with a minimum wall thickness .156" on the three-inch legs and a minimum wall thickness of .188" on the two-inch legs. The hose body extrusions shall be welded to the super-structure framework, becoming an integral portion of a complete unitized support system. Sheet metal or sheet aluminum with double or triple formed breaks, does not meet the technical requirement of the specification in providing a complete hosebody framework and are not acceptable. Sides shall be constructed of aluminum sheet welded to the framework.

ELECTROLYSIS CORROSION CONTROL

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to prevent electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

All 1/4" diameter and smaller screws and bolts shall be stainless steel.

Due to the expected life of the vehicle, proposals will only be acceptable from manufacturers that include these corrosion features.

SIDE BODY HEADER

All high side compartment tops shall be NFPA approved non-slip treadplate with the side body header area above the compartment doors a smooth aluminum painted surface.

Lower or rear face compartments, if specified shall be provided with polished aluminum drip rails.

TANDEM WHEEL WELL PANEL AND LINER

For ease of accessibility and maintenance, the tandem wheel well panels shall be constructed for ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth aluminum plate that is fully gasketed and bolted in place with stainless fasteners. Wheel wells shall be of the removable design so as to provide replacement in the event of damage. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. Wheel well panel shall be isolated from the apparatus body utilizing .25" nylon spacer blocks.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 24.00") radius wheel well liner constructed of exterior grade .25" black polyethylene sheet shall be provided. For ease of removal, the liner shall be held in place via means of a self-tension retention system. Due to possible corrosion and contamination by road debris in the wheel well area, mechanical fasteners shall not be used to secure the wheel well liner.

FENDERETTES

The rear wheel wells shall be radius cut for a streamlined appearance. A polished type 304 stainless steel radius fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless-steel fasteners with nylon isolators to prevent contact of the fastener with the wheel well housing panel. A black rubber gasket shall be installed between the stainless fenderette and the apparatus body sides. Silicone caulking does not meet the intent nor the technical requirement of a solid gasket material in this area and is not acceptable.

HEAVY DUTY EXTRUDED ALUMINUM BODY SUB-STRUCTURE

A minimum of four (4) 4.00" high by 2.50" wide tubular "I" beam horizontal cross tubes with a .375" vertical wall thickness shall be provided on each side of the body. The horizontal "I" beams shall run from within 1.00" of the aerial torque box outward and shall be routed through and fully welded to the vertical and horizontal structural extrusions forming the body super-structure.

The exterior side equipment compartments shall be bolted to no less than three (3) horizontal formed steel channels welded directly to the aerial torque box. The channels shall be no less than 3.00" X 10.75" X .25" with a return lip of no less than 3.00" and shall be formed to "receive" the horizontal aluminum extruded I-beams incorporated into the body sub-structure system. The horizontal "I" beam shall be bolted to the horizontal formed steel channels. All interface areas between the steel channels and aluminum extruded members shall be isolated by an elastomeric isolator.

OUTRIGGER BODY PANELS

Body panels shall be installed at each outrigger to provide a clean, finished look to the outrigger cavity. Outrigger panels shall be double break formed from polished aluminum treadplate that is fully gasketed and bolted in place with stainless fasteners.

OUTRIGGER COVERS

Polished stainless-steel covers shall be attached to the extending outrigger assemblies.

BODY WIDTH

The overall width of the aerial body shall not exceed 100". The overall width across the rub rails shall be 101".

COMPARTMENT DEPTH

The left side compartment above the front outrigger shall have an interior usable depth of not less than 24" with the specified doors in the closed position.

The left side compartment ahead of the tandem wheels shall have an interior usable depth of not less than 12" in the upper portion and 24" in the lower portion with the specified doors in the closed position.

The left side compartment above the tandem's front wheels shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

The left side compartment above the tandem's rear wheels shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

The left side compartment behind the tandem wheels shall have an interior usable depth of 22" with the specified doors in the closed position. If specified to be full height, this compartment shall have an interior usable depth of 12" in the upper portion.

The left side compartment above the rear outrigger shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

If specified, the left side compartment behind the rear outrigger shall have an interior usable depth of not less than 12" in the upper portion and 22" in the lower portion with the specified doors in the closed position.

The right-side compartment above the front outrigger shall have an interior usable depth of not less than 24" with the specified doors in the closed position.

The right-side compartment ahead of the tandem wheels shall have an interior usable depth of not less than 12" in the upper portion and 24" in the lower portion with the specified doors in the closed position.

The right-side compartment above the tandem's front wheels shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

The right-side compartment above the tandem's rear wheels shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

The right-side compartment behind the tandem wheels shall have an interior usable depth of 22" with the specified doors in the closed position. If specified to be full height, this compartment shall have an interior usable depth of 12" in the upper portion.

The right-side compartment above the rear outrigger shall have an interior usable depth of not less than 12" with the specified doors in the closed position.

If specified, the right-side compartment behind the rear outrigger shall have an interior usable depth of not less than 12" in the upper portion and 22" in the lower portion with the specified doors in the closed position.

HINGED COMPARTMENT DOORS

Any compartment calling for a hinged door shall be supplied with a flush style door, so that all hinged compartment doors shall be of the overlapping style so that the entire door fits flush against the apparatus body sides. Doors shall be designed, in the closed position, to have the painted edges protected from damage on the tops by forming the treadplate compartment tops into an extended drip edge, on the bottoms by the rub rail and on the front and rear by extending the front and rear vertical scuff plates into protective edges. There shall be no visible painted door edge surfaces when the doors are in the closed position. Doors shall not extend into the compartments thereby reducing the usable compartment depths.

Doors shall be a minimum 2" thick, fabricated of a minimum of 1/8" smooth aluminum. Full panel inner compartment door liners shall be provided and constructed from smooth aluminum. Exterior door panels shall be smooth with no welds visible on the exterior skin. Double door compartments shall not require nor be equipped with a secondary latch to hold the same in position.

All compartment door hinges shall be full length piano type constructed of a minimum 14-gauge type 304 stainless steel with 1/4" stainless steel hinge pin with dual directional bolt holes for ease of adjustment. Door hinges shall be fully recessed and protected from the environment by the door gasket. The door hinges shall not be visible from the outside of the body when the doors are in the closed position.

Striker plates shall be a minimum of 12-gauge stainless steel and posts shall be positioned so they do not interfere with the clear door openings by pointing down. Door retention studs or posts on striker plates that extend into the clear door frame opening do not meet the technical intent of these specifications and are not acceptable. Door hinges and striker plates shall be attached with minimum 5/16" stainless steel nuts and bolts.

On vertically hinged double door compartments, the secondary door shall have a nylon door holder, top and bottom of the interior of the door to hold the door in place when closed. When specified, horizontally hinged lift-up doors shall be equipped with heavy-duty gas filled dampeners to hold the doors in the open position. All other hinged doors shall be equipped with spring loaded hold open devices specifically designed for use on vertically hinged doors. Door holders shall be bolted in position. The door ajar switches shall be fully enclosed within structural members and shall not extend into the clear door opening.

All hinged compartment doors shall be provided with hollow core weather stripping to provide a weather tight seal at the door opening and to prevent road spray and debris from entering the compartment.

ROLL-UP COMPARTMENT DOORS

Any compartment calling out a roll up door shall be supplied with a door fabricated from aluminum. Exterior side equipment compartments so specified shall be equipped with roll-up shutter doors to be installed as specified herein. The door shall be located above and outside of the interior of the compartments thereby protecting the door in the raised position from possible damage by the shifting of equipment.

The door roll mechanism shall also be protected from possible damage should equipment shift while the vehicle is in transit with the door in the closed position.

When the door is raised, the location of the drum assembly shall not allow water drainage from the doors into any portion of the interior of the compartment, thereby preventing the accumulation of water, snow, or ice from damaging the equipment located therein.

The roll-up door drum assembly shall be fully enclosed and protected from the elements. Provisions shall be made on each end and each side of the apparatus for moisture to self-drain from the raised doors to below the apparatus body using integral drainage ports.

To provide access for repairs and adjustments without removing equipment from the compartments, the door roll assemblies shall be serviced from above the compartment. There shall be no need to remove any equipment nor to open the door to provide service to the same. Should a door be prohibited from being raised because of damage to or a defect in the roller assembly, service must be capable of being performed without the cutting, damaging, or destroying of the door shutters to gain access. Access to the door mechanism shall be provided through the removable door roller assembly access panel that requires only the use of common hand tools to remove.

Pendent plates supporting the door roll assembly shall be bolted in place, adjustable and capable of being removed with common hand tools. Pendent plates and supports that are welded in place do not meet the maintenance and service criteria of these specifications.

In order to provide unlimited access to stored equipment and to help prevent damage to the tracks by removing equipment, the tracks shall not protrude into any portion of the door frame opening. The width of the door frame opening shall be the actual useable width available to store and remove equipment. No Exception.

Door openings shall match the compartment sizes as specified.

The roll up door(s) shall be fabricated from aluminum extrusions and be manufactured and assembled in the United States.

The door slats shall be double-wall extrusions with dimensions of 1.366" high x .315" thick. The exterior surface shall be flat and the interior surface concave to deflect loose equipment to prevent the door from jamming. Each slat shall have interlocking end shoes to prevent the slat from moving side to side resulting in binding of the door.

Each slat shall be separated by a co-extruded PVC and rubber inner seal to prevent metal to metal contact and minimize dirt and moisture from entering the compartment. The inner seal shall not be visible from the exterior to

maintain a clean appearance of door. The slats shall have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects.

The track shall be a one (1) piece aluminum assembly that has an attaching flange and finishing flange incorporated into the design that facilitates installation and provides a finished look to the door without additional trim or caulking. A low-profile side seal shall be utilized to maximize usable compartment space.

A drip rail designed to prevent water from dripping into the compartment shall be provided. The drip rail shall have a built in replaceable non-contacting seal to eliminate scratching of the surface of the door.

Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door and have "V" shaped double seal to prevent water and debris from entering the compartment. A two (2) inch wide finger pull shall be integrated into the bottom rail extrusion for easy one hand opening and closing. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand.

A magnetic door ajar system shall be integrated in the lift bar handle and the lift bar handle retainer block to signal an open door.

The roll mechanism shall have a clip system that connects the curtain slats to the operator drum to allow for easy tension adjustment without tools. A four (4) inch diameter counterbalanced operator drum to shall be incorporated to assist in lifting the door.

All compartment door openings shall match the compartment sizes.

EZ-PULL DOWN STRAPS

Eight (8) elastic nylon straps shall be provided and installed on each roll up door. The straps shall be secured to the side wall of the interior compartment in a way that will allow the EZ-Pull strap to contract automatically and tuck inside the compartment when closed to prevent the strap from dangling and hindering closing of the door. When the door is the open position, the straps shall be installed so that they are fully extended as to not interfere with removing items from the compartment. For the ease of locating, the straps shall be bright orange in color.

EXTERIOR DOOR HANDLES

All hinged compartment doors shall be furnished with a deluxe Eberhard E Grabber Model #1-21100 die cast, chrome finished two-point pull handle assembly with slam type latches. The latch shall utilize a "free-floating" handle with recessed pocket for ease-of-use even when wearing mitts or gloves. The compartment door shall open with a simple, easy "pull" of the latch handle.

Door handles shall be held in place with blind mounting brackets for security and appearance. To prevent possible interaction between dissimilar metals, assembly shall not break any painted surface. A non-moisture absorbing gasket shall be installed on the door latch by the latch manufacturer isolating the latch assembly from the door panel surface. The door handle assembly and installation shall be water and weather resistant.

Handles which are held in place with visible fasteners, two-sided tape or glue do not meet the intent of this requirement.

To safely access equipment stored in the upper section of the compartments, a heavy-duty drop-down door safety step shall be provided at the base of the compartment. The drop-down door safety step and the upper door can be operated independently of each other and shall have no exposed mechanical devices or hinges in the closed position. Any use of piano style hinges does not meet the intent of this specification. **No Exception.**

An aluminum NFPA compliant treadplate stepping surface shall be provided full width of the compartment and no less than 16" in depth. Each drop-down safety step shall have a minimum static load capacity of 500 pounds. Gas-filled springs shall assist in opening and closing the drop-down door safety step.

Each safe-step exterior surface shall have a stainless-steel mirror finish when in the closed position.

LEFT SIDE BODY COMPARTMENTS

The left side body compartmentation shall be as follows:

LEFT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the front outrigger. The compartment shall be equipped with a painted roll up door.

- 24" Wide Compartment

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

- 41" Wide Compartment
- Match Stafford County

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Two (2) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

COMPARTMENT LIGHTS

Two (2) 54" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 36 LEDs per light producing approximately 180 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT UPPER COMPARTMENT - ABOVE FRONT TANDEM

There shall be one (1) compartment above the tandem's front wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

- 79" Wide Compartment
- 50" Deep
- Match Stafford County

A removable louvered vent shall be provided in the compartment.

PULL-OUT AND DROP-DOWN

One (1) 250-pound capacity rollout and drop-down tray shall be installed in the specified compartment. The tray shall be constructed of aluminum with 3" edges on each side. The tray shall be equipped with roller bearing wheels.

The track assembly allows the tray to roll out of compartment while dropping downward at approximately a 30-degree angle.

COMPARTMENT DIVIDER

One (1) compartment divider constructed from 3/16" smooth aluminum material shall be installed. The divider shall be bolted in for ease of removal.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT UPPER COMPARTMENT - ABOVE REAR TANDEM

There shall be one (1) upper compartment above the above the tandem's rear wheels and the low compartment behind the tandem's rear wheels. The compartment shall be equipped with a single hinged lift up door.

The compartment shall be equipped with the following:

- 29" Wide Compartment
- Match Stafford County

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the rear outrigger. The compartment shall be equipped with a single horizontal hinged lift up door.

The compartment shall be equipped with the following:

- 24" Wide Compartment

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT REAR COMPARTMENT - BEHIND REAR WHEELS

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height double hinged door.

The compartment shall be equipped with the following:

- 37" Wide Compartment
- Match Stafford County

MUST SELECT 40-65-38XX ABV RR TNDM IN PLACE OF 40-65-42XX.

MUST SELECT 40-66-24XX ABV RR OUTRIGGER IN PLACE OF 40-66-42XX.

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Three (3) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

COMPARTMENT LIGHTS

Two (2) 48" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 30 LEDs per light producing approximately 150 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

LEFT TURNTABLE ACCESS - BEHIND REAR OUTRIGGER

There shall be one (1) left side turntable access cavity, 25" wide, located behind the rear outrigger. The floor and sides of the turntable access cavity shall be finished with polished aluminum treadplate.

- 25" Wide Cavity

ACCESS LADDER

There shall be a swing out and down access ladder supplied and installed on the left side apparatus, for accessing the aerial turntable. It shall be of an all-aluminum design and shall incorporate treads sixteen (16") wide spaced no more than eighteen (18") inches apart. The overall width shall be approximately seventeen (17") inches. The ground to the first step dimension, on level ground, shall be no more than eighteen (18") inches. When in the deployed position the ladder shall have an angle of approximately 75-degrees to facilitate ascending and

descending the ladder. The ladder shall be retained in the stowed and deployed position by two (2) gas cylinders and shall not require the use of latches to hold it in position. A weatherproof switch shall sense the down position of the step and alert the driver should the vehicle emergency brake be released. This switch will be wired into the open-door warning system.

HANDRAIL EZ-CLIMB LADDER

Two (2) extruded aluminum non-slip handrails with offset brackets shall be installed on the EZ-Climb access ladder, one (1) on each side.

STEP LIGHT

Two (2) incandescent step light(s) with clear lens shall be installed.

RIGHT SIDE BODY COMPARTMENTS

The right-side body compartmentation shall be as follows:

RIGHT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the front outrigger. The compartment shall be equipped with a painted roll up door.

- 24" Wide Compartment

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

RIGHT FRONT COMPARTMENT - AHEAD OF REAR WHEELS

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single painted roll up door.

- 41" Wide Compartment

A removable louvered vent shall be provided in the compartment.

ROLL-OUT ALUMINUM TOOL BOARD

Two (2) roll-out tool board panel shall be mounted vertically within compartment. The panel and tracks shall be rated to a maximum load of 500 lb. Panel to be formed of .188" smooth aluminum with an opening to accommodate a gloved hand to slide tool board.

The tool board shall slide out to full extension of the compartment, with a device to hold tool board in both fully extended and stored positions.

COMPARTMENT LIGHTS

Two (2) 48" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 30 LEDs per light producing approximately 150 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

RIGHT UPPER COMPARTMENT - ABOVE FRONT TANDEM

There shall be one (1) compartment above the tandem's front wheels. The compartment shall be equipped with a single painted roll up door.

The compartment shall be equipped with the following:

- 79" Wide Compartment

A removable louvered vent shall be provided in the compartment.

SWING-OUT ALUMINUM TOOL BOARD

One (1) 250 lb. rated capacity swing-out tool board(s) shall be provided. There shall be mounting/pivot points located at both the top and bottom of the tool board. The mounting points on the apparatus body shall be suitably designed to support the intended weight.

A single latch mechanism shall be provided to lock the tool board in the stored position and in the open position.

The tool board shall be provided with a .125" aluminum tool board panel for mounting equipment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

RIGHT FRONT COMPARTMENT - ABOVE FRONT OUTRIGGER

There shall be one (1) compartment located above the rear outrigger. The compartment shall be equipped with a single horizontal hinged lift up door.

The compartment shall be equipped with the following:

- 24" Wide Compartment

A removable louvered vent shall be provided in the compartment.

COMPARTMENT LIGHTS

Two (2) 18" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 12 LEDs per light producing approximately 60 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

RIGHT REAR COMPARTMENT - BEHIND REAR WHEELS

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height double hinged door.

The compartment shall be equipped with the following:

- 40" Wide Compartment

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Three (3) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

500# ROLLOUT TRAY

One (1) rollout equipment tray shall be installed in a standard depth compartment. The 500# rated tracks shall have roller bearings. The tray shall be constructed of .188" smooth aluminum plate, fabricated with four 3" sides.

The unit shall roll fully out of the compartment, with a gas operator to hold tray in both the "in and out" positions.

COMPARTMENT LIGHTS

Two (2) 48" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 30 LEDs per light producing approximately 150 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

RIGHT REAR COMPARTMENT - BEHIND REAR OUTRIGGER

There shall be one (1) full height compartment located behind the rear outrigger. The compartment shall be equipped with a single full height hinged door.

The compartment shall be equipped with the following items:

- 25" Wide Compartment

A removable louvered vent shall be provided in the compartment.

ADJUSTABLE SHELF

Three (3) compartment shelf(ves) shall be provided and constructed of .190" smooth aluminum and are to have formed upward breaks on front and rear for added strength. Shelve(s) shall be fully adjustable within the compartments. Lighter gauge shelf materials are not acceptable.

Shelf(ves) shall extend full width of the compartments, within .50" of the overall width, and adjust up and down in the integral shelf tracks.

COMPARTMENT LIGHTS

Two (2) 48" long OnScene Solutions Access LED lights shall be installed, one on each side of the door opening.

The lights shall contain 30 LEDs per light producing approximately 150 lumens (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications.

The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

REAR COMPARTMENT

There shall be one (1) compartment located at the rear of the apparatus. The compartment shall be located within the aerial torque box to accommodate the ladders and pike poles as specified. The compartment shall be equipped with a single horizontally hinged, double-pan aluminum treadplate lift-up door with two-point D-ring latch. The door shall be held in the open position by two (2) heavy-duty gas filled dampeners.

COMPARTMENT LIGHT

One (1) 36" long OnScene Solutions Access LED light shall be installed above the door opening and contain 24 LEDs producing approximately 120 lumens per light (six LEDs and 30 lumens every 9"). The light stick shall be rated at 100,000 hours of service and shall be provided with a 5-year free replacement warranty. The light shall have a 5/8" LEXANTM polycarbonate tube enclosure for severe duty applications. The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

SLIDE OUT REAR LADDER AERIAL TORQUE BOX

Ground ladders and pike poles shall be accessed from the rear of the apparatus. All ladders shall mount on individual brackets and slide on composite material so as not to damage the main beams of the ladders. Pike poles and the folding ladder shall be stored in individual storage area. Ladders shall have stops provided on the front of all slides so ladders will not slide forward during emergency braking conditions.

LADDER SOURCE

New ground ladders shall be provided by the manufacturer.

ROOF LADDER

One (1) Duo Safety Model 775-A, 12-foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards.

ROOF LADDER

One (1) Duo Safety Model 775-A, 14-foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards.

ROOF LADDER

One (1) Duo Safety Model 875-A, 16-foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards.

EXTENSION LADDER

One (1) Alco-Lite Model PEL-35, 35-foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed latest NFPA standards.

EXTENSION LADDER

One (1) Duo-Safety Model 1200-A, 28-foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

FOLDING ATTIC LADDER SOURCE

New folding attic ladders shall be provided by the manufacturer.

FOLDING LADDER

One (1) Duo Safety Model 585-A, 10-foot folding aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards.

COMBINATION LADDER

One (1) Velocity Aluminum Ladder (Little Giant) Model 15413-001, 7–11-foot combination aluminum extension ladder shall be provided on the apparatus. (Old model 13)

PIKE POLE MOUNTING BRACKET

Five (5) tube shall be provided for pike pole mounting. The tube shall have a 2-1/4" interior diameter and shall be mounted within the ladder compartment.

PIKE POLE SOURCE

The pike poles shall be provided by the body builder.

PIKE POLE

One (1) 4' pike pole with "D" handle shall be provided. The pike pole shall be of fiberglass construction.

PIKE POLE

One (1) 6' pike pole with round handle shall be provided. The pike pole shall be of fiberglass construction.

PIKE POLE

Two (2) 8' pike pole with round handle shall be provided. The pike pole shall be of fiberglass construction.

PIKE POLE

One (1) 10' pike pole with round handle shall be provided. The pike pole shall be of fiberglass construction.

REAR RUB RAIL

A single piece full body width polished aluminum rub rail shall be bolted in place at the rear of the body. The rub rail is to be removable for ease of repair or replacement. The rear rub rail shall be a heavy extruded aluminum "C" channel.

WHEEL WELL COMPARTMENT LEFT SIDE AHEAD OF WHEELS

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

One (1) Fire Shopp Inc. breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless-steel door shall be provided.

One (1) one inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment, and shall hang within one inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT LEFT SIDE BETWEEN TANDEMS

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel between the rear tandem wheels of the type specified herein.

Two (2) Fire Shopp Inc. breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless-steel door shall be provided.

Two (2) one inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment, and shall hang within one inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT LEFT SIDE BEHIND WHEELS

One (1) wheel well compartment shall be located on the left side in the rear wheel well panel behind the rear wheels of the type specified herein.

FUEL FILL DOOR

A Fire Shopp Inc. fuel fill access assembly shall be provided on the left side rear wheel well area. The assembly shall include a brushed stainless steel fuel fill enclosure door and a black polymer fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

WHEEL WELL COMPARTMENT RIGHT SIDE AHEAD OF WHEELS

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel ahead of the rear wheels of the type specified herein.

One (1) Fire Shopp Inc. breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless-steel door shall be provided.

One (1) one inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment, and shall hang within one inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT RIGHT SIDE BETWEEN TANDEMS

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel between the rear tandem wheels of the type specified herein.

Two (2) Fire Shopp Inc. breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless-steel door shall be provided.

Two (2) one inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment, and shall hang within one inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

WHEEL WELL COMPARTMENT RIGHT SIDE BEHIND WHEELS

One (1) wheel well compartment shall be located on the right side in the rear wheel well panel behind the rear wheels of the type specified herein.

One (1) Fire Shopp Inc. breathing air cylinder storage compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless-steel door shall be provided.

One (1) one inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

FRONT BODY PROTECTION PANELS

Aluminum tread plate overlays and panels shall be installed on the front of the body from the lower edge to the top of the compartment doors. The material shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

REAR BODY PROTECTION PANELS

Smooth aluminum shall be installed on the rear of the body, to allow for the installation of a "Chevron" stripe on the rear.

HANDRAIL TURNTABLE ACCESS

Two (2) extruded aluminum non-slip handrails, approximately 30" in length, shall be provided and mounted on the apparatus, one (1) on each side of the turntable access.

EXTRUDED ALUMINUM RUB RAILS

Full body length polished aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel. There shall also be a bolt on aluminum corner casting on each rear corner to blend the rear tail board assembly with the side rub rails.

APPARATUS 120 VOLT ELECTRICAL SPECIFICATIONS

GREEN STAR IDLE REDUCTION TECHNOLOGY (IRT)

A Green Star idle reduction technology system shall be supplied with the apparatus that will significantly reduce the amount of diesel exhaust soot, NOx, and CO2 emissions into the atmosphere. Diesel engines contain pollutants that negatively impact human health and the environment. Diesel engines emit large amounts of nitrogen oxides, particulate matter, and air toxics, which contribute to serious public health problems. Idle reduction technology has been verified by the U.S. EPA to reduce diesel emissions from diesel powered vehicles and engines.

The Green Star IRT will reduce idle time through the use of an auxiliary power unit (APU) in conjunction with automatic diesel engine controls that will shut down the main chassis diesel engine during operations not requiring the use of the pump assembly. This system will be automated and will not require intervention from the vehicle operator. There will be a time delay engine shut down feature that will automatically shut down the chassis main diesel engine and engage the diesel driven APU. This feature will be available when the chassis air brake is set and when the pump assembly is not engaged.

All features below are available with the main chassis diesel engine off.

The chassis voltage system is protected against extreme drain of the battery bank. If the vehicles voltage drops to 12 VDC, the automatic engine controls will start the chassis diesel engine to provide a charge.

Reducing the amount of idle time for the chassis diesel engine will substantially reduce the fuel consumption.

GREEN STAR "INHIBIT" SWITCH

There shall be a momentary rocker switch with green indicator on the cab switch panel labeled "INHIBIT".

When activated, the switch shall "INHIBIT" or prevent the automatic operation of the Green Star IRT system.

AUXILIARY POWER UNIT (APU)

A Kubota D1105-BG EPA and CARB tier 4 rated diesel generator engine with a power rating of 7.9 KW will be provided. The Kubota engine will drive a Mecc Alte NPE32-B/4 industrial duty 4 pole, 60Hz, 120/240VAC, brushless, digitally regulated generator. The Mecc Alte generator will have a continuous rating of 10.5KW. The engine and generator will run 1800RPM. This lower RPM leads to substantially longer life and less maintenance compared to other APU systems. Total standard 12VDC power output is 270AMPS. An APU on/off switch will be provided in the chassis cab to start and stop the APU on demand.

GENERATOR CONTROL BOX LOCATION

The control box for the Green Star shall be mounted in the L1 compartment on the back wall of the compartment.

REMOTE MOUNT OIL FILTER

A remote oil filter kit is to be installed up to 3 feet from the diesel APU to improve access to the diesel APU oil filter.

GREEN STAR AUXILIARY 12 VOLT AIR CONDITIONING

The system shall have a minimum of a 12.6 cubic inch a/c compressor, belt driven by the Green Star diesel APU engine, providing refrigerant the chassis a/c system. The belt driven compressor refrigerant lines shall be connected into the chassis a/c system to provide cool and dry air into the chassis cab using the chassis cab's a/c evaporator and condenser. All a/c systems in the chassis cab shall perform comparably to when the chassis engine is running. controls for the auxiliary a/c use the existing a/c controls that are part of the chassis cab climate control system.

The auxiliary a/c using the diesel APU is available anytime the chassis engine is not running, the APU is running, chassis ignition is on and air conditioning has been selected through the chassis a/c controls. Auxiliary a/c shall not require the chassis to be in idle reduction.

DIESEL APU DISPLAY

A color display shall be installed at the pump operator's panel to indicate diesel APU hours, IR shutdown timer, chassis battery condition, APU coolant temperature, APU oil pressure and preheat time. The display shall have buttons to manually start and stop the APU to provide 120/240 VAC power on demand.

GENERATOR MOUNTING LOCATION

The generator shall be installed on top of the body.

CIRCUIT BREAKER BOX

One (1) circuit breaker box for single phase voltage equipment shall be provided capable of holding twelve (12) breakers.

CIRCUIT BREAKER BOX LOCATION

The circuit breaker box shall be installed in an outside body compartment.

The instrument panel for the generator shall be installed next to the breaker panel.

REFRIGERATOR

One (1) 3.0 cubic foot Nova Kool compact AC/DC Refrigerator Only shall be provided and installed. The unit shall be secured within the apparatus for highway travel. The refrigerator shall be powered by a combination 12 volt or 24 volt or 120-volt system, which shall operate from the generator or shore power receptacle. The

refrigerator shall be equipped with a convenient, adjustable temperature control. The unit shall be approximately 28-3/8" high by 16-3/4" wide by 18-1/2" deep.

Behind Driver seat.

120V ELECTRIC RECEPTACLE -- STRAIGHT BLADE

One (1) single 120-volt 15-amp straight blade, 3-prong receptacle with spring loaded weatherproof cover shall be provided.

WINCH RECEIVER - REAR

The rear of the apparatus body shall be equipped with a receiver assembly for high or low angle rescue or winch applications. The receiver shall be a square steel tube, same size as that of a trailer hitch. The unit shall be attached to the body sub-frame assembly.

- NO 12V Winch Power Receptacle
- NO 12V Trailer Hitch Power Plug

WINCH RECEIVERS - SIDE BODY

The body shall be equipped with one (1) receiver assembly for high or low angle rescue or winch applications.

The receiver shall be a square steel tube, same size as that of a trailer hitch. The unit shall be attached to the body sub-frame assembly or chassis frame rails and shall be located behind the rear wheels.
NO 12V Winch Power Receptacle

APPARATUS PAINT STRIPING AND LETTERING SPECIFICATIONS

BODY PAINT PROCESS

While constructing the truck body, all aluminum parts that are to be finish painted shall be properly fitted on the body and then removed to be painted individually. The back side of all aluminum parts shall be sanded smooth of any burrs and sharp edges.

During reassembly of the apparatus, care shall be exercised in fitting and fastening the parts back in their respective position on the vehicle.

All aluminum parts shall be bolted to the body using stainless steel fasteners. Zinc or Cadmium plated fasteners are not acceptable. All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating.

All seams shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering between any body panels.

The body and all parts shall be thoroughly washed with a grease cutting solvent (PPG DX330) prior to any sanding. After the body has been sanded and the weld marks and minor imperfections are filled and sanded, the body shall be washed again with (PPG DX330) to remove any contaminants on the surface.

A coating of epoxy sealer (PPG DP 48/50/90) shall be applied with a minimum of 1.0 mil dry film build. The epoxy sealer allows for maximum adhesion to the body material. A color coating of PPG Urethane Paint Direct Gloss with PPG Catalyst shall be applied with a minimum of 2.0 mil dry film build. The catalyst provides a base level UV barrier to prevent fading and chalking. A coating of PPG Clearcoat Topcoat Urethane with a minimum of 2.0 mil dry film build shall be applied. The clearcoat topcoat provides a maximum amount of UV barrier protection.

All products and technicians are certified by PPG every two (2) years.

INTERIOR COMPARTMENT FINISH

The interior of the ten (10) compartments shall be unpainted and have a D/A orbital sander finish.

TOUCH-UP PAINT

One (1) two (2) ounce bottle of touch-up paint shall be furnished with the completed truck at final delivery.

SCOTCHLITE REFLECTIVE LETTERING

The lettering shall be applied with Scotchlite reflective material, shaded in black.

A quantity of fifty (50), four (4) inch letters are to be placed on the cab and on the body as directed by fire department.

All lettering is to be 3M 680 series reflective vinyl Gold #680-64.

- No lettering shall be required at the front of the cab.
- The specified FD supplied decal shall be installed on the driver and officer door.

The rear most door on the L3 and R3 compartments above the specified stripping to state:

- EMERGENCY
- DIAL 911

The rear most door on the L3 and R3 compartments below the specified stripping to state:

- PARAMEDIC

Exact lettering and locations and sizes shall be approved at the mid-point construction conference.

AERIAL LIFT CYLINDER PROTECTIVE COVERS

There shall be aluminum protective covers provided, one over each of the two (2) aerial lift cylinder assemblies.

The covers shall be constructed from .125 thick, smooth aluminum material and be designed to prevent damage to the lift cylinders due to impact from environmental factors. The protective covers shall be bolted in place using stainless steel fasteners and easily removable for service to the aerial lift cylinders. Lubrication points shall be accessible without the need to remove the protective covers. In addition to the added component protection, the lift cylinder covers shall provide added fire fighter safety from lift cylinder pinch point areas and a superior aesthetic appearance to the aerial device.

The exterior of the protective covers shall be painted to match the lower body color using PPG automotive quality product. The application process shall conform to all PPG guidelines.

INSTALL CUSTOMER SUPPLIED DECALS

Factory installation of the purchaser supplied decals shall be provided as specified.

REFLECTIVE STRIPING

A 1" x 5" x 1" wide 3M brand Scotchlite reflective multi-stripe shall be affixed to the perimeter of the vehicle.

There shall be a 1" gap between each of the stripes. Striping shall conform to applicable NFPA requirements. At least 50% of the perimeter length of each side and width of the rear, and at least 25% of the perimeter width of the front of the vehicle shall have reflective striping.

Stripe, Triple Reflective, 1" x 5" x 1"

COLOR OF STRIPING MATERIAL:

- 1" material = Gold #680-64
- 6" material = White #680-10

CHEVRON STRIPING

The entire rear portion of the body shall have 3M reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel.

The stripping shall be 3M brand and be the following part numbers:

- Red: 983-72NL ES
- White

REFLECTIVE TAPE ON OUTRIGGERS

The outriggers that extend beyond the side of the body shall have white reflective tape applied to both the front and rear facing sides.

INTERIOR CAB DOOR CHEVRON

Reflective striping shall be installed on the interior of each chassis door. The lower portion of the doors shall have a scotchlite red and yellow chevron striping applied to it. A reflective stripe shall also be applied on the vertical outer edge of each cab door.

YELLOW SAFETY TAPE - STANDING & WALKING SURFACES

The apparatus shall be NFPA standard 15.7.1.6 designating any horizontal standing or walking surface higher than 48-in (1220 mm) from the ground and not guarded by railing or structure at least 12-in (300 mm) high shall have at least a 1-in (25 mm) wide safety yellow line delineation that contrasts with the background to mark the outside perimeter of the designated standing or walking surface area, excluding steps and ladders.

APPARATUS EQUIPMENT SPECIFICATIONS

ROAD SAFETY KIT

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

One (1) first aid kit.

AERIAL INSTRUCTION LABELS

Safety and instructional labels shall be applied at all necessary areas on the aerial device to identify points critical to the safe operation and maintenance of the aerial.

TRUCK NUMBER FRAME

A 10" x 10" frame shall be installed on the truck that can hold a truck number sign. The frame shall be flip up style so that the number sign can be easily removed or replaced. The frame shall be painted to match the exterior of the truck where it will be mounted.

TRUCK NUMBER SIGN

A truck number sign plate shall be provided for the truck number frame.

WHEEL CHOCKS WITH MOUNTS

A pair of Zico Model SAC-44 Quic-Chok folding wheel chocks shall be provided and mounted under the apparatus body with model SQCH-44H horizontal mounting brackets.

EMERGENCY ROAD KIT

One (1) DOT emergency kit shall be provided with the completed apparatus and shall include a 2.5 ABC fire extinguisher and three reflective triangles.

APPARATUS AERIAL SPECIFICATIONS

101' THREE SECTION REAR MOUNT PLATFORM

Platform Design and Construction

The 101-foot three section, steel aerial platform has a maximum height of 100' 7" at the top of the platform handrail at 75 degrees elevation. The horizontal reach from the outside edge of the platform to the center of the turntable is 94' 2.8".

Operation on grades

The aerial shall be capable of being operated with full rated capabilities in any plane up to 5 degrees out of level with the turntable leveled as much as possible by placement of the outriggers. Operation beyond this limit shall be at the operator's discretion.

Extension and Retraction System

Two [2] 5" inside diameter cylinders, each with 2-1/2" outside diameter rods and a 79-3/4" stroke are used in the extension and retraction system. The specified extension cylinders shall not exceed the specified length. The required length cylinders shall place the cylinder weight closer to the base of the aerial device. Smaller size cylinders are required since they are easier to handle for removal for service reasons. In addition, the specified shorter stroke cylinders provide less potential for damage to the rod by hitting an obstacle when extended.

The extension cylinders have counterbalance valves mounted directly to them. The extension cylinders extend and retract the platform with a 4:1 cable cylinder arrangement from totally retracted to 101' 6" at 75 degrees totally extended.

The extension and retraction system shall have six [6] pairs of galvanized cables. Base section cables shall have a .625" diameter, mid-section cables shall have a .50" diameter, and fly section cables shall have a .375" diameter. The sheaves, in which the cables run on, shall be galvanized, no exception. A galvanized cable running on a galvanized sheave creates a natural lubricate allowing the cables to run more freely minimizing the wear on the cables.

There are no restrictions on the waterway as the ladder is extended and retracted.

State-of-the-Art Technology

The aerial device materials, parts, technology, or procedures used in construction of the apparatus are subject to change at the manufacturer's discretion to provide "equal or better" products and must be in compliance to applicable NFPA # 1901 standards and industry standard practice.

BASE SECTION

The platform base section length shall be 36' 2", with inside dimensions of 39.25"; distance between the top of the handrail and the centerline of the rungs shall be 28". The base rails shall be 100,000 PSI material and the handrails shall be 100,000 PSI material.

MID SECTION

The platform mid-section length shall be 36' 8", with inside dimension of 32.5"; distance between the top of the handrail and the centerline of the rungs shall be 23.125". The base rails shall be 100,000 PSI material and the handrails shall be 100,000 PSI material.

FLY SECTION

The platform fly section length shall be 38' with inside dimension of 27.375"; the distance between the top of the handrail and the centerline of the rungs shall be 19.25". The base rails shall be 100,000 PSI material and the handrails shall be 70,000 PSI steel material.

PLATFORM BASKET

The platform basket shall be constructed of a steel frame with aluminum doors, front sides and bottom with a floor area of nineteen square feet (38" x 72") with continuous 42" high guard railing. The floor shall be built of aluminum bar grating for a skid resistant surface and to provide for drainage.

The gates on the left and right front corners shall swing inward and a gate for entry from the ladder to the platform shall swing upward.

Heat Shield

A heat reflective shield is provided on the front, sides, and bottom of the platform. The heat shield shall on the bottom shall be coated in a black line-x.

Water Curtain Spray System

A water curtain system provides a cooling spray under the entire floor of the platform with a minimum of 75 gallons per minute. A single quarter turn valve with an actuator accessible from the platform shall control the spray system.

Safety Belt Attachment

The platform shall have provisions for personnel working on the platform to attach fall protection harnesses.

Four (4) attachment points for connection of a safety harness shall be provided in the platform. Two attachment points shall be bolted to the rear and two shall be welded diagonally to the rear and side wall at the rear of the platform.

Rope Eyelets

Two (2) rope rescue eyelets, with a combined lifting capacity of 1000 pounds, shall be welded to the bottom of the platform. The eyelets shall be able to carry 500 lbs. per eyelet with no other in or attached to the platform.

Repelling Arms

One (1) set of repelling arms shall be mounted to the front of the platform one (1) on each side of the platform above the monitor(s) and shall be held in place with two (2) pins. The repelling arms shall be capable of being stored by removing the adjusting arms in the slotted coupling and folding them in against the front of the platform. Each repelling arm shall have a capacity of 250lbs. The repelling arms shall be able to support a rescue basket. The rescue basket shall be able to clip onto the repelling arms to help with rescue operations.

Parapet Arms

One (1) set of parapet arms shall be supplied with the aerial. The parapet arms shall fit into the coupler at the top and bottom of the platform. The brackets can hold up to a 20' roof ladder. The ladder shall be secured through its beams and one (1) rung, by a bar capable of being latched in place and able to withstand 500lbs load while maintaining a two to one (2:1) safety factor.

TECHNICAL DRAWINGS

Technical and engineering drawings shall be provided for the aerial platform as follows: left side view, top view and rear view.

ELECTRICAL DRAWINGS

Technical and engineering drawings shall be provided for the 12-volt electrical system for the model of apparatus specified.

HYDRAULIC DRAWINGS

Technical and engineering drawings shall be provided for the aerial device hydraulic system.

IN PROCESS AERIAL PHOTOS

Photos shall be taken during production to provide updates to the Fire Department. The following set of photos shall be supplied:

- Aerial Sections in assembly
- Turntable in assembly
- Torque Box after galvanizing
- Platform in assembly (if applicable)
- Aerial loaded and ready for shipping

AERIAL OPERATION INSTRUCTIONS

As required by applicable sections of NFPA #1901, operating instructions and demonstration of the aerial apparatus shall be provided at the purchaser's location. The aerial manufacturer shall provide these instructions and demonstration of the aerial apparatus.

Personnel providing the instructions shall be professionally trained by the aerial manufacturer prior to the delivery process. All costs of these instructions shall be borne by the bidder. The bidder shall notify the purchaser a minimum of 14 days prior to the instruction period. The bidder shall provide classroom instructions, operational instruction. The instructor shall provide all necessary material to assure proper operation of the aerial device.

This instruction period shall be for a minimum and maximum of four (4) days at the purchaser's location.

AERIAL OPERATION MANUALS

At time of delivery, an aerial manual shall be supplied which shall include aerial operation overview, service documentation, wiring schematics and technical high-level bill of material drawings. The documentation shall address at a minimum the inspection, service, and operations of the fire apparatus and all major components thereof. This documentation and manuals shall be provided in the English language.

MATERIAL AND WORKMANSHIP WARRANTY ONE (1) YEAR

TERMS AND CONDITIONS

Rosenbauer hereby warrants each new Rosenbauer Aerial to be free from defects in material and workmanship for a warranty period of one (1) year starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within one (1) year from the date of delivery of the apparatus to the original purchaser, whichever occurs first. The inspection must indicate that the failure was attributed to defective material or workmanship. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Normal maintenance services or adjustments, including but not limited to, lubricants, cable adjustment, hoses, and other incidentals.
- Any item that has been repaired, replaced, or altered by a facility not approved in advance by Rosenbauer, or in a manner which, at Rosenbauer's discretion, may adversely affect the safe operation or durability of the vehicle or item.

- Special, incidental, or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.

EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort, or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless of whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of aerial or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

NOTE: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

THIRD PARTY TESTING

The aerial ladder shall be inspected and tested by a third party. A non-destructive test shall be performed on each unit at a rate of 100% inspection by the Underwriters Laboratories inspector, exceeding the requirements applicable section of NFPA #1901 for new apparatus. All non-destructive procedures shall be fully documented and meet or exceed the requirements of applicable sections of NFPA #1901.

PERFORMANCE WATER FLOW TESTING

The waterway flow test shall be conducted by an accredited third-party testing organization with certified results provided on delivery of the apparatus. If the aerial device is equipped with a permanent water system and has a rated vertical height of 110 ft (34 m) or less, standard model flow test data shall be provided to the purchaser.

If the water system has been modified from the standard model configuration, a new flow test shall be conducted to determine that the friction loss in the water system between the base of the swivel and the monitor outlet does not exceed 100 psi (700 kPa) with 1000 gpm (3748 L/min) flowing and with the water system at full extension.

A flow test shall be conducted on each vehicle to determine that the water system is capable of flowing 1000 gpm (3748 L/min) (or rating as specified in these specifications) at 100 psi (700 kPa) nozzle pressure with the aerial device at full elevation and extension.

Where the apparatus is equipped with a fire pump designed to supply the water system, the test shall be conducted using the onboard fire pump.

The intake pressure to the fire pump shall not exceed 20 psi (140 kPa).

GALVANIZED OUTRIGGERS

The aerial outriggers assemblies, beam, outer jack tube, inner jack tube, jack cover plate, and jack pad shall be galvanized.

The outriggers shall be galvanized inside and out. The process shall eliminate the rusting, scratching or paint chips on the outriggers. The galvanizing process shall permeate the metal and shall not be an "over-coating only" on outside surfaces. The galvanized components shall lessen the potential for corrosion and eliminates the requirement for finish paint. The process shall negate any later requirement for touch-up paint or total repaint of the outrigger/stabilizer assemblies.

The galvanizing shall provide the steel outriggers with both barrier and cathodic protection from corrosion. The galvanizing process shall immerse the complete outrigger components in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

CORROSION RESISTANT WARRANTY

A galvanized steel corrosion protection warranty shall be provided for the aerial outriggers and stabilizers for a period of twenty-five (25) years. The conditions of the corrosion protection warranty shall be as follows.

- This warranty shall cover parts and labor to correct the affected area or parts only and shall not be deemed to include entire outrigger or stabilizer assemblies. This warranty does not include the turntable, aerial ladder sections, or torque box.

- Should any warranty claim occur, the affected area shall be inspected, reviewed, and approved by the aerial manufacturer prior to any work being completed.

- Any authorized warranty work shall be only performed by the aerial manufacturer or its designated repair personnel or facility. Any repairs completed by un-authorized repair shops or personnel shall cause this warranty to be invalid.

- Transportation costs associated with this corrosion protection warranty shall be the responsibility of the purchaser.

- Warranty shall not cover damage due to lack of specified normal maintenance and service as outlined and required in the service and operating manuals provided with the apparatus.

- Warranty shall not cover damage from accidents, abuse, physical and mechanical damage, and all other conditions not considered as "normal" operating conditions.

- The obligations of the aerial manufacturer pursuant to the foregoing warranty with respect to the outriggers and stabilizers shall be limited to the cost of bringing the affected area into compliance with the specifications or of removing any defects in materials or workmanship.

GALVANIZED TORQUE BOX

The torque box shall be hot dip galvanized inside and out. The galvanizing shall include the top and bottom and sides of the torque box, outrigger electrical compartment, and outrigger valve control compartment.

The torque box shall be totally hot dip galvanized. The galvanizing process shall not be an over-coating only to outside surfaces but shall permeate the metal. The galvanizing process shall prevent or greatly lessen rust and corrosion on the torque box and in areas between the torque box and chassis frame rails, as well as areas which cannot be reached when washing the unit and which cannot be visually inspected and shall eliminate the need to finish paint the torque box.

The galvanizing process shall provide the steel torque box assembly with both barrier and cathodic protection from corrosion. The galvanizing process shall immerse the complete torque box component in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

CORROSION RESISTANT WARRANTY

A galvanized steel corrosion protection warranty shall be provided for the aerial torque box for a period of twenty-five (25) years. The conditions of the corrosion protection warranty shall be as follows.

- This warranty shall cover parts and labor to correct the affected area or parts only and shall not be deemed to include the entire torque box assembly. This warranty does not include the turntable, aerial ladder sections, or outrigger/stabilizers.

- Should any warranty claim occur, it shall be inspected, reviewed and approved by the aerial manufacturer prior to any work being completed.

- Any authorized warranty work shall be only performed by the aerial manufacturer or its designated repair personnel or facility. Any repairs completed by un-authorized repair shops or personnel shall cause this warranty to be invalid.

- Transportation costs associated with this corrosion protection warranty shall be the responsibility of the purchaser.

- Warranty shall not cover damage due to lack of specified normal maintenance and service as outlined and required in the service and operating manuals provided with the apparatus.

- Warranty shall not cover damage from accidents, abuse, physical and mechanical damage, and all other conditions not considered as "normal" operating conditions.

- The obligations of the aerial manufacturer pursuant to the foregoing warranty with respect to the torque box shall be limited to the cost of bringing the affected area into compliance with the specifications or of removing any defects in materials or workmanship.

AERIAL SECTIONS GALVANIZED

Prior to assembly, each aerial ladder section shall be hot dip galvanized. The galvanizing process will permeate each ladder section to prevent rust and corrosion and not be merely an over-coating. The galvanized aerial ladder sections shall be provided in the natural finish eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion resulting from hitting the ladder many times in use. The galvanized ladder shall reduce the maintenance requirement for grease once or twice a year, based on duty cycle.

The aerial ladder sections are galvanized inside and out, including base rails, handrails, diagonals, rungs, and K-Braces. This process eliminates the rusting, scratching or paint chips on the aerial sections. Galvanizing has been recognized as an effective way to protect steel from corrosion.

Galvanizing shall provide a barrier and cathodic protection from corrosion. During the galvanizing process, the complete aerial ladder sections shall be immersed in molten zinc. Through diffusion, the zinc shall bond to the steel at the molecular level. The resulting zinc coating shall provide a barrier that shields the steel from the environment.

STRUCTURAL DESIGN WARRANTY TWENTY-FIVE (25) YEAR

TERMS AND CONDITIONS

Rosenbauer hereby shall warranty each new Rosenbauer aerial device to be free from structural failure caused by defective design and workmanship for a warranty period of twenty-five (25) years or 100,000 miles starting on the date the vehicle is delivered to original purchaser. Under this warranty, Rosenbauer agrees to furnish any item or items to replace those that have been found to be defective in material or workmanship where there is no indication of abuse, neglect or other than normal service. Such an item or items, at the option of Rosenbauer must be made available for our inspection at our request and returned to our factory or another location designated by Rosenbauer. Transportation of such an item or items will be arranged and covered by buyer within thirty (30) days after the date of failure and within two (2) years from the date of delivery of the apparatus to the original purchaser, whichever occurs first. The inspection must indicate that the failure was attributed to defective material or workmanship. Authorization for repair or item replacement must be sought from Rosenbauer customer service department prior to repair or item replacement occurring.

This warranty is applicable only if the aerial device is serviced annually by an authorized Rosenbauer service facility. The cost of the annual service is the responsibility of the purchaser.

THIS WARRANTY SHALL NOT APPLY TO OR COVER THE FOLLOWING:

- Normal maintenance services or adjustments, including but not limited to, filters, lubricants, cable adjustment, hoses, and other incidentals.
- Any item that has been repaired, replaced, or altered by a facility not approved in advance by Rosenbauer, or in a manner which, at Rosenbauer's discretion, may adversely affect the safe operation or durability of the vehicle or item.
- Special, incidental, or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
- Any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, exposure to corrosive agents, fire, severe environmental conditions or acts of God.

EXCLUSIONS OF DAMAGES BOTH INCIDENTAL AND CONSEQUENTIAL.

At no time shall Rosenbauer be held liable for any incidental, consequential, indirect, special and/or punitive damages whatsoever, whether coming from breach of contract, warranty, tort, or equity. Such items shall include the chassis or other items sold by Rosenbauer, or their operation or their failure to operate, or defects herein, or any undertakings, acts or omissions related to, regardless of whether Rosenbauer's knowledge of the possibility of any such damage.

Without limitation of the generality of the preceding statements, Rosenbauer categorically disclaims any and all liability for property and personal injury, damages, penalties for lost revenue and/or profit, loss of chassis or products and associated pieces of equipment, the expense of substituting chassis and/or products, or the out of service expenses, resulting from damages and/or delays, that creates down time expenses and/or create economic losses, or any third party claims for damages.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability or make any alteration to this warranty in connection with the sale of our apparatus unless expressly given in writing by Rosenbauer.

NOTE: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

CORROSION RESISTANT WARRANTY

A galvanized steel corrosion protection warranty shall be provided for the aerial ladder sections for a period of twenty-five (25) years. The conditions of the corrosion protection warranty shall be as follows.

- Aerial manufacturer will not be held responsible for any damage due to high temperatures from fire conditions, chemicals, or any material that could attack the galvanized surface.
- The galvanized coating warranty shall cover re-coating of affected areas only.
- Should any warranty claim occur, it shall be inspected, reviewed and approved by the aerial manufacturer prior to any work being completed.
- Any authorized warranty work shall be only performed by the aerial manufacturer or its designated repair personnel or facility. Any repairs completed by un-authorized repair shops or personnel shall cause this warranty to be invalid.
- Transportation costs associated with this corrosion protection warranty shall be the responsibility of the purchaser.
- This warranty shall cover parts and labor to the affected area or parts only and shall not be deemed to include entire ladder sections or the entire aerial device. This warranty does not include aerial rung coverings.
- Warranty shall not cover damage due to lack of specified normal maintenance and service as outlined and required in the service and operating manuals provided with the apparatus.
- Warranty shall not cover damage from accidents, abuse, physical and mechanical damage, and all other conditions not considered as "normal" operating conditions.

- The obligations of the aerial manufacturer pursuant to the foregoing warranty with respect to any such aerial ladder sections shall be limited to the cost of bringing the affected area into compliance with the specifications or of removing any defects in materials or workmanship.

PLATFORM BASEKET GALVANIZED AND LINE-X

The outside support structure of the aerial platform basket shall be galvanized. The aerial platform basket framework shall be entirely coated. The process shall eliminate the rusting, scratching or paint chips on the basket. The galvanizing process shall permeate the metal and shall not be an "over-coating only" on outside surfaces. The galvanized components shall lessen the potential for corrosion and eliminates the requirement for finish paint. The process shall negate any later requirement for touch-up paint or total repaint of the platform basket framework.

The galvanizing shall provide the steel platform basket with both barrier and cathodic protection from corrosion.

The galvanizing process shall immerse the complete platform basket components in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

Before assembly, in preparation for the coating, the platform basket shall be thoroughly cleaned and prepared to conform to good adhesion practices. The basket framework, skins, flooring, and applicable mountings within the platform shall be coated in black Line-X. The process shall eliminate the rusting, scratching or paint chips and create a more durable surface. The platform waterway transition shall be painted black.

LADDER BED

A heavy-duty ladder bed shall be provided for support of the aerial in the travel position.

NO GALVANIZED/PAINTED OUTRIGGERS.

RUNG COVERS

For ease of climbing the ladder rungs shall be equally spaced on a maximum 14" centers and minimum 11.75" centers and shall have a skid-resistant surface or covering.

For added safety, skid-resistant rung covering shall be provided. The rung covering shall not twist and shall cover at least 60 percent of the climbing area of each rung.

Round rungs shall be provided and shall have a minimum outside diameter of 1-1/4", including the skid-resistant surface or covering.

For maximum strength, the minimum design load for each rung shall be 500lb distributed over a 3-1/2" wide area at the center of the length of the rung with the rung oriented in its weakest position.

Each aerial rung shall be covered with one (1) continuous piece of a protective, High-Traction safety walk non-skid material.

WEAR PADS

The aerial wear pads shall be "PET" type and shall incorporate semi-crystalline hardness, rigidity, mechanical strength with exceptional sliding properties and very low sliding wear. The pads shall be used between the telescoping sections for maximum weight distribution, strength, and smooth operation. Side wear pads shall be nylatron GSM, stainless steel adjustment screws shall be provided on the side wear pads to permit proper side clearance.

SIGN PANEL BRACKETS

The aerial manufacturer shall supply aerial sign brackets welded to the base section of the aerial. These brackets shall be located on both sides of the base section.

AERIAL SIGN PANELS

Sign panels shall be provided on each side of the base section that are 16" high x 120" long. The panels shall be painted to match the aerial ladder sections.

CRADLE COVER BRACKETS

Brackets shall be installed on the cradle of the aerial for the installation of the cover. Design and installation shall be done by the final OEM.

EXTENSION MARKINGS

To improve safety and to provide the operator with vital information, extension markings shall be provided. For best visibility, the base section of the ladder shall include markings on the outside of the left handrail and the inside of the right handrail to indicate extension position of the ladder in operation. The markings shall be BLACK reflective numbers that will mark every 10 feet with a hash mark between the numbers.

ROOF LADDER BRACKETS BASE

There shall be welded plates and bolt on roof ladder mounting brackets installed on the outside of the base section.

ROOF LADDER

A Duo Safety Model 775-A, 14-foot aluminum roof ladder with folding steel roof hooks on one end and feet on the other end shall be provided on the outside of the base section. The ladder shall meet or exceed applicable NFPA standards. It shall be standard width 19" Duo-Safety roof ladder.

RESCUE BASKET

A Junkins rescue basket, model #JSA-200 or approved equal plastic rescue basket, and mounting shall be installed on the outside of the base section. Rescue basket shall be modified to attach to the repelling arms at the front of the platform. The mounting will be an aluminum box mounted on the outside of the base section of the aerial ladder for storage of a rescue basket. The box shall have a hinged cover with latches to secure the cover.

The box shall be approximately 23-3/4" high x 10" wide x 86" long. It shall be constructed of 3/16" smooth aluminum and painted to match ladder sections.

BREATHING AIR

A breathing air system shall be provided from the base section of the platform to the tip of the platform basket.

The system shall be installed to comply with all applicable sections of NFPA #1901 standards. The cylinders shall be shipped fully pressurized with breathing air. The breathing air system service and operation shall be covered in the manuals provided with the apparatus on delivery.

The installation shall include the following equipment:

- One (1) 4500 PSI 444 Cubic Foot DOT air cylinder
- One (1) pressure gauge on the cylinder
- One (1) air pressure regulator with downstream pressure gauge
- One (1) Grade D air filter
- Two (2) air outlets in platform basket.

Piping System

All components of the piping system shall be designed for a pressure rating of three times the working pressure that they are expected to carry. The piping system shall be arranged with a high-pressure regulator at the air supply that shall limit the air pressure in the piping up the aerial device to the pressure required to supply 125 psi at the outlet point.

All piping, valves, and components shall be fabricated of corrosion-resistant materials and shall be sized for the number of outlets provided at the secondary aerial ladder operator's position. A pressure relief valve set to relieve the pressure at 1½ times the working pressure of the piping system in the event of regulator failure shall be provided on the downstream side of the high-pressure regulator.

All valves, pressure regulators, and gauges shall be protected from accidental damage. The piping or hose system between the air cylinder(s) and the secondary aerial operator's position shall be installed so as to prevent damage due to abrasion, bending, pinching, or exposure to excessive heat.

A low air warning system shall be provided that will monitor the air volume and provide an audible and visual warning at the lower control station when the air volume is at or below 20 percent. An increase in frequency of the alarm shall activate when the remaining air level drops to 10 percent.

The quality of the breathing air shall meet the requirements of NFPA #1989, Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.

All components of the system that the breathing air will be in contact with shall be cleaned of oil, grease, contaminants, and foreign material.

BREATHING AIR QUICK DISCONNECT

A breathing air quarter-turn refill valve shall be mounted between the breathing air regulator and the air cylinder and shall be used for refilling the base section air cylinder(s).

BREATHING AIR TURNTABLE QUICK DISCONNECT

One (1) breathing air quick disconnect shall be mounted and installed at the turntable, with piping to the breathing air system.

BREATHING AIR MONITORING SYSTEM

The Smart Aerial breathing air system indicator shall be displayed on the smart screen at the turntable control stand and platform control stand. The indicator will change from green to amber to red-to-red flashing to alert the operator that the air is getting low.

BREATHING AIR BOTTLE COLOR

The breathing air bottle shall be painted the same color as the ladder sections.

BREATHING AIR BOTTLE MARKING COLOR

The identification markings on the breathing air bottle shall be reflective material and to match the color of the extension markings on the ladder.

PIKE POLE WELD PLATES

Welded-in mounting plates shall be installed for a pike pole mounting on the left side of the fly section.

PLATFORM FLOOR LIGHTING

White LED lighting will be provided to illuminate the platform. The platform floor lighting shall be activated by the aerial master switch.

PLATFORM SELF LEVELING

The platform shall have a leveling system incorporated that shall allow the basket to maintain level in relationship to the turntable, regardless of elevation. The platform leveling functions shall be proportionally regulated by the

elevation of the aerial. The platform leveling shall proportionally reduce the speed of elevation to prevent the basket from becoming out of level.

The platform leveling system shall consist of electric controls powering hydraulic cylinders, with manual override. Leveling of the platform shall be maintained with two (2) hydraulic cylinders located at the platform. The system shall not require a slave cylinder and shall provide a simpler, more reliable system.

The system shall provide the capability to manually tilt the basket and hold this position for better access to the work area.

PLATFORM 8" EXTENSION

The platform sides shall be extended 8" beyond the platform basket frame with a rubber bumper along the outside edge.

PLATFORM EXTENDING ARMS

Extending arms shall be provided to permit connection of a roof ladder or rescue basket to the platform basket.

They are secured to the platform using a retainer pin. These arms rotate and will lock into place in the travel position and rescue position. Each arm is rated at 250lbs. Together the arms are rated at 500lbs.

PLATFORM MAN-SAVER BAR

One (1) Fire Research 24" ManSaver aerial safety bar with 10" loop shall be installed. The safety bar shall open either upward or inward and be spring loaded to automatically return to the horizontal closed position. The safety bar assembly shall be made of aluminum and stainless steel.

The length of bar shall be: 24". Location of safety bar shall be installed at the platform basket opening from the aerial fly section to the platform basket.

PLATFORM STORAGE BOXES

The rear walls of the platform shall each have a storage box built in to give personnel in the platform access to equipment and hose from the inside of the platform. Each storage box shall have a mesh cover to prevent the objects being stored from falling out. Both sides of the storage box shall be covered in a black bed liner type of material. The black color shall prevent the glare to personnel in the cab while driving.

PLATFORM RUBBER BUMPERS

A heavy extruded rubber bumper shall be fastened to the outside of the platform for extra protection. To protect the bottom of the platform there shall be four (4) rubber bumpers attached.

PLATFORM TILT UP SWITCH

There shall be a switch in the cab to allow the platform to be nested up or back to increase driver visibility. This switch is capable of functioning while the tuck is driving down the road. There shall be an indicator on the back side of the platform to show that the platform is aligned/unaligned with the ladder. The driver shall be able to see the indicator from inside the cab.

PLATFORM ROTATION SYSTEM

Two (2) hydraulic motors to operate two (2) planetary gearboxes, capable of field adjustment, to rotate the aerial platform activating the rotation system.

A 48" diameter external tooth bearing shall be provided for 360-degree continuous rotation in either direction. As turntable bearing bolts are required to be checked and re-torqued at regular intervals, to make this task relatively simple, the ability to re-torque all bolts from the top of the turntable are mandatory.

The bearing is bolted to the bearing base plate using thirty (30) 1.00" SAE Grade 8 bolts. The bearing is bolted to the turntable using thirty (30) 1.00" SAE Grade 8 bolts.

Two hydraulic release/spring brakes provide a positive lock for the rotation.

Two (2) pressure reducing valves control the force of the rotation to protect the side load of the aerial platform.

CONTROL PANEL LANGUAGE

All panels including main operations stations, outrigger stations, warning labels and load charts shall be written in English.

COMMAND PEDESTAL

The Command Pedestal and platform control system is monitored by programmable logic control. The programmable logic control operating system shall use absolute encoders for elevation and rotation to be able to monitor the following functions continuously to offer maximum safety. The monitored aerial control functions are as follows:

The turntable shall have a stand-up Command Pedestal. The following items shall appear on the panel at the main control station:

One (1) aerial Smart Screen"

- One (1) system pressure gauge, 0-5,000 psi minimum
- One (1) emergency stop button
- One (1) joystick controller
- Monitor switches

The following items shall appear on the panel at the platform control station:

- One (1) aerial Smart Screen
- One (1) emergency stop button
- One (1) joystick controller
- Monitor switches

The system shall be capable of performing simultaneous aerial functions.

Smart Screen

One (1) aerial smart screen shall be installed at the main control station and one (1) at the platform control station.

The screen shall consist of multiple pages. All screens shall have the same information.

The first page on the screen shall be the main aerial information. It shall give the following information:

- Aerial rotation: as the aerial is rotated 180 degrees left and right of the ladder bed, positive and negative numbers shall indicate how far right or left the aerial is rotated.
- Aerial height: as the aerial extends and elevates the distance from of the top of the platform handrail to the ground shall be indicated on the screen.
- Aerial reach: as the aerial extends the reach shall be indicated on the screen from the front of the platform to the center of the turntable.
- Aerial extension remaining as the aerial extends the amount of feet remaining to extend shall be indicated.
- Rungs aligned indicator: as the aerial extends the rungs aligned indicator shall illuminate on the smart screen, indicating safety for climbing. The indicator shall not illuminate when the rungs are not aligned.
- Operational envelop indicators: prior to the aerial coming upon an unsafe operating position, while operating over the short, jacked side of the truck or too close to the cab and body, the collision protection shall ramp to a stop. The right disables
- down disable and/or left disable indicators shall appear on the screen indicating to the operator the function that is inoperable based on the position of the aerial.

The aerial shall be programed so it shall not make contact with the cab or body or any equipment as identified during the build process. Programmable cab and body collision protection shall alert the operator with indicators on the screen stating Right Rotation Disabled, Down Disabled and Left Rotation Disabled. Each individual indicator shall illuminate when the corresponding aerial function(s) (right rotation, left rotation or lowering) are disabled. All three indicators shall illuminate when the E-STOP is pushed, or the outrigger interlock is active.

- Emergency stop engaged indicator: when the emergency stop button is engaged an indicator shall appear on the screen. An emergency stop button on the control panel shall be used for immediate emergency stopping of all aerial functions at all operating locations.

- Aerial load gauge: a load indicator shall appear on the screen to visually allow the operator to know they are within the safe operating parameters. The indicator shall change colors, green (safe), amber (caution) and red (overloaded) to alert the operator of the load on the aerial. The red load indicator shall flash and begin to sound a warning alarm at 100 pounds over the rated load.

- Outrigger warning indicator: when any outrigger is not fully extended, and the jack is not supporting some of the truck weight a pie chart shall flash to indicate the outrigger has not been set for aerial operations. The outrigger diagram shall show the percent the outriggers have been extended. The outrigger diagram shall not change color until the jack has been set. Once the outrigger has been set the outrigger diagram shall change colors to match the pie charts display of color and safe operational envelop.

The aerial shall be able to be rotate 360 degrees over the short, jacked side of the truck. A programmable logic control system allows the aerial to rotate over the short, jacked outriggers while maintaining safe operating parameters. An indicator shall appear on all the smart screens to warn the operator that one or more outriggers have been short set. An operational pie chart shall also be on the smart screen to indicate the safe operating parameters depending on the short set outrigger. In the event the vehicle has been set up with one or more of the outriggers short set, any attempted operation outside the predetermined parameters shall automatically ramp the operation to a feather-soft stop. A corresponding disabled light shall appear on the screen to alert the operator of the disabled function. The operator shall be able to return the aerial back to the safe operating parameters without the use of overrides.

- Auto bedding indicator and switch: an indicator shall appear when the aerial is in the 20/20/20 zone (within 20 degrees left or right of the ladder bed, below 20 degrees elevation and 20 percent retraction remaining) indicating the ladder can now be automatically stowed. By pushing a momentary button on the side of the screen the aerial shall rotate, retract and lower into the bed while avoiding cab and body collision.

- Tip lights switch: a button on the side of the screen shall turn all of the tip lights and the rung lights on and off.

- Tracking lights switch: a button on the side of the screen shall turn all of the tracking lights and the panel lights on and off.

- Flow and Pressure gauge: an indicator on the screen shall give a continuous reading of the monitors flow and presser. By pressing the momentary switch, the icon shall switch to total gallons flowed. Total gallons shall be saved until the truck master switch has been turned off.

- Hydraulic tank level: an icon will indicate the amount of oil left in the tank.

- Dirty filter: a picture will illuminate when the aerial filters are dirty and need to be replaced.

The second page shall display the following information:

- Side to side leveling: a picture and number (positive or negative) indicating how level the truck is left to right.
- Front to back leveling: a picture and number (positive or negative) indicating how level the truck is front to back.
- Aerial hour meter: continual reading of the operational hours on the aerial.
- Outrigger extension: an outrigger with percentage shall appear indicating how far the outrigger is extended: red (25%-49% extension), orange (50%-74% extension), yellow (75%-95% extension), or green (96%-100% extension). The percentage shall co-inside with the operational pie chart on the next page to show the operator the parameters in which the aerial shall be able to operate.
- Hydraulic tank temperature: an icon will indicate the temperature of the oil in the hydraulic tank.

The third page shall display the following engine diagnostics information:

- Engine RPM: shows live readings of the engines RPM's
- Engine coolant temperature: shows live readings of the engines coolant temperature
- Engine oil pressure: shows live readings of the engines oil pressure.
- Battery charging condition: shows live readings of the engine's battery condition
- Transmission fluid temperature: shows live readings of the transmission fluid temperature.
- Fuel level: shows live readings in percentage of the amount of fuel remaining.

The fourth page shall display the following information:

- Aerial operations pie chart: an operational pie chart shall show in the corresponding color (red, orange, yellow or green) how far each outrigger out is extended, and aerial's operational parameters based on each outrigger set up.

The fifth page shall display the following information:

- Load and reach chart: an aerial load and reach chart shall be displayed to inform the operator of the operational capabilities of the aerial wet and dry.

Aerial Speed

The aerials speed functions are proportionally regulated by the elevation and extension of the aerial. The aerial shall have proportional slow down on full extension and full retraction. The elevation system shall proportionally reduce the speed at sixty (60) degrees and ramp to off at full elevation. Lowering shall proportionally reduce the

speed at three (3) degrees and ramp to off at minus twelve (-12) degrees. When the aerial is fully retracted the aerial speed shall be 20 percent faster than when fully extended.

The controls are also proportionally regulated during rotation, extension, and elevation operations. The aerial shall smoothly ramp up to full operation speed to prevent jerking of the aerial. Should the operator release the controller during any of the three operations, the aerial shall ramp to a smooth soft stop.

Joystick Controller

A single joystick controller shall control aerial left/right, extend/retract and raise/lower functions. The joystick shall operate with the natural movement of the operator's hand for rotation and elevation. There shall be a thumb lever on the joystick to operate extension and retraction. The joystick shall have built in ramp up and ramp down capabilities.

The safety interlock trigger on the back side of the joystick must be engaged to operate all aerial functions. With the trigger activated the RPMs shall increase to 1,250 RPM and maintain there for two (2) seconds after returning to the neutral position.

Lighting

LED Lights shall illuminate the main control station and turntable work area for added operator visibility and safety.

GAUGES & VISUAL DISPLAY UNITS

All gauges and visual display on the aerial apparatuses at the operating positions shall readout in the following measurements:

- Distances shall be displayed in feet and inches
- Loads shall be displayed in pounds
- Flows shall be displayed in gallons/psi
- Engine information shall be displayed in F/PSI

CONTROL STAND LID

There shall be a lid installed on the command pedestal to give extra protection to the screen and joystick.

TURNTABLE

The turntable shall be three sided (left, rear & right) with the corners cut to allow for personnel to enter and exit the turntable. The turntable walking area shall be covered with NFPA #1901 compliant skid resistant black Line-X material, with a 2-1/2" lip. Three (3) 42" high, slip resistant handrails capable of withstanding a 225-pound force applied from any direction shall be installed on the turntable.

HANDRAIL STAINLESS STEEL

The handrails shall be knurled stainless steel.

HANDRAIL ORIENTATION

The turntable handrails shall be bent outwards to allow for maximum room. A lit crossmember shall be installed roughly halfway up the handrail. The handrail shall have an opening that allows for equipment to pass through from the ground to the aerial.

LIT CROSSMEMBER COLOR

The crossmember light color shall be white.

TURNTABLE MAN SAVER BARS

Two (2) Fire Research ManSaver bars shall be installed on the left and right side of the turntable. The safety bars shall lift either upward or inward to open and be spring loaded to automatically return to the horizontal closed position. The safety bar assembly shall be made of aluminum and stainless steel.

MANSAVER BAR COLOR

TURNTABLE FINISH

The aerial control console will be constructed from smooth aluminum and painted to match the ladder sections.

The back of the control panel will have one (1) full hinged door. The front of the control panel will have one (1) 8" x 8" hinged door. These doors are provided for maintenance and emergency operation of the aerial.

TURNTABLE LID DOOR AJAR LIGHT

The cover of the turntable control console shall be designed to indicate when the lid is open. The light will be connected to the door ajar/outrigger extended light in the cab.

OUTRIGGER CONTROL PANEL

The outrigger control panel shall have a switch to energize the hydraulic system for outrigger functions.

Control Panel

The control panel shall include a Smart Screen that will display the same information as the other Smart Screens on the aerial, no buttons shall be active that will allow for aerial operation (i.e., auto bedding). There shall be three (3) switches not located on the screen at the rear of the truck.

- Manual override system to override the outrigger/aerial interlock system

- One (1) switch for the emergency power unit.
- Outrigger on/off switch

HYDRAULIC HIGH-PRESSURE FILTER

The hydraulic system shall be equipped with a 'high pressure' hydraulic oil filter between the pump and the control valve designed to meet the flow requirements of the system. There shall be a filter replacement light on the outrigger control panel for the convenience of the mechanic. The return filter and pressure filter shall be connected together to the same light on the outrigger control panel to indicate replacement of filters.

HYDRAULIC EXTRA HIGH PRESSURE FILTER

One (1) hydraulic oil high pressure replaceable filter element shall be shipped loose.

HYDRAULIC RETURN FILTER

A 10-micron low pressure return line filter element shall be connected to the hydraulic reservoir. The 10-micron return line replaceable filter. There shall be a filter replacement light on the outrigger control panel for the convenience of the mechanic. The return filter and pressure filter shall be connected together to the same light on the outrigger control panel to indicate replacement of filters.

HYDRAULIC EXTRA RETURN LINE FILTER

One (1) return line filter element, SE10, 10-micron filter shall be shipped loose.

WARNING LABELS

Danger, caution, and warning labels shall be installed at all aerial control stations, individual controls, and at various locations on the aerial device. These labels shall be in compliance to industry warning symbols, ASME, SAE, and applicable NFPA #1901 standard. These labels shall be with symbols commonly used in the fire industry.

AIR HORN

A momentary switch shall be provided for controlling the vehicle's air horn at the turntable control console. The button shall be in the smart screen.

TORQUE BOX

The torque box connecting the turntable to the outriggers shall provide the rigidity needed for the aerial to be operated at -12 degrees to a +75 degrees elevation and full extension. The dimensions of the torque box will be unique to the truck and based upon customer requested specifications and engineering stability requirements. The back of the torque box shall be open for the option of ladder storage.

TOW EYES

Two (2) tow eye mounts shall be installed on the rear of the torque box.

OUTRIGGER COMPONENTS

The aerial device outriggers and stabilizers shall be designed to function with the Smart Aerial operational components. The system shall have a pad that pivots left-to-right and front-to-rear.

Extension Beams

The extension beams shall entirely enclose the extension cylinders to prevent damage to the rods and hoses. Each outrigger shall be controlled with an independent controller which can extend and lower the outrigger at the same time or raise and retract the outrigger at the same time.

A double box design shall enclose the jack cylinders completely to protect the rods from damage that could result from exterior circumstances.

Jack Cylinders

The jack cylinders shall have pilot operated check valves for both the raised and lowered positions. Each jack tube shall be drilled for mechanical pin locks for a safety backup.

The outrigger jack cylinders shall be mounted so they can be removed from the top of the outrigger jack tube.

Jack cylinders that are removed from the bottom of the outrigger jack tube will not be accepted.

Outrigger Deployment Alarm and Warning System

The outrigger deployment alarm, of not less than 87 DBA, shall sound at all times while the outrigger master switch is in the on position and stops sounding only when the outrigger switch is turned off. The audible alarm shall warn personnel that outrigger movement is possible at any time the switch is on.

Safety Features

The outrigger system provides the following safety features:

- A cradle interlock system shall 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.

- There shall be a system on the truck that continually monitors the weight and balance on the truck and how that effects the associated operating parameter. This system allows operators to set up the truck up in a short-jacked position. The operator shall be allowed to operate the full 180 degrees off the short-jacked side of the truck within the safe operating parameters without the need of a second operator.

- Operators shall be able to identify on the screen what quadrant each outrigger is set in as well as the associated safe operating parameters they are in.

- The outrigger not extended indicator on the screen shall have a warning indicator flashing if one or more outriggers has not been set.
- The monitoring system on the truck shall be able to identify if two or more adjacent outriggers come off the ground and shut down the current aerial operation. The monitoring system shall then only allow the operator to adjust the truck back into the safe operating parameters.

Lighting

A Whelen V-Series, model 5V3R, shall be mounted to the inside of the vertical outrigger jack beam. The warning light shall consist of 12 red Super-LEDs installed on a V-light PC board with a TIR V-light reflector.

The flashing lights shall alert personnel on either side of the outrigger of its location. The V-light PC board shall have four white Super-LEDs installed below that work independently as the ground illumination light. The lights shall activate with the master switch.

Outrigger and Stabilizer Specifications

The specified outriggers and torque box system shall provide a 1-1/2 to 1 stability safety factor when the aerial is in any operating position.

The stability requirements shall be met by the apparatus on which the aerial device is mounted when that apparatus is in a service-ready condition but with all normally removable items such as water, hose, ground ladders, and loose equipment removed.

The aerial device shall be capable of sustaining a static load 1-1/3 times its rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees downward in the direction most likely to cause overturning.

All outriggers and stabilizers that protrude beyond the body of the apparatus shall be striped or painted with reflective material so as to indicate a hazard or obstruction. Each outrigger or stabilizer shall also be provided with one or more red warning light(s) located either on the stabilizer or in the body panel visible on the side of the apparatus where the stabilizer is located.

Cradle Interlock System

A cradle interlock system shall 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 shall be installed at the cradle, to prevent operations of the stabilizers once the aerial has been elevated from the nested position.

OUTRIGGERS

Two (2) front and two (2) rear out and down H-style outriggers shall be provided on the apparatus. The rear outriggers shall be located directly behind the rear axle and the front outriggers shall be connected to the front of the torque box.

The outrigger assemblies shall consist of the following components:

- A 2-1/2" inside diameter cylinder with a 1.375" outside diameter rod shall extend and retract the outrigger 60".
- A 5" inside diameter cylinder with a 3" outside diameter rod shall raise and lower each jack tube a distance of 28".

The total width from the center of pivot pin to center of pivot pin when the outriggers are fully extended shall be: 17' 6".

OUTRIGGERS DIRECTLY BEHIND CAB

The front outriggers shall be mounted directly behind the cab.

SHORT JACKING

The aerial device shall be able to be operated a full 360 degrees while any outrigger is short set. As the outriggers are set further out the operating parameters are adjusted to allow for more aerial operations. The outriggers shall be monitored, and operations shall be displayed when the outriggers are in the following quadrants 25% - 49%, 50% - 74%, 75% - 95% and 96% - 100%. An operational graph shall be displayed outlaying the operational capabilities of the aerial within each quadrant. The outrigger along with the load on the aerial will continually be monitored so that the aerial is always within safe operating parameters. Devices that do not allow the aerial to operate 360 degrees while the truck is short jacked shall not be accepted, no exception.

OUTRIGGER PLATES

An auxiliary outrigger plate shall be provided for each outrigger. The units shall be 2' x 2' in size, one for each outrigger made from 1/2" aluminum with a handle for easy movement.

OUTRIGGER STOWED INDICATOR LIGHT

An outrigger stowed indicator light will be provided in the cab. The light shall indicate if one or more outriggers is not fully retracted and fully raised. The light will be connected to the door ajar light in the cab.

PERFORMANCE CAPABILITIES

The following are aerial ladder and water capabilities for the operation of this unit in the unsupported configuration with the truck level, the outriggers fully extended and lowered to relieve the chassis weight from the axles. The capabilities are based upon 360-degree continuous rotation and up to full extension.

The following capabilities are based upon continuous 360-degree rotation and up to full extension. The aerial ladder and water system shall be designed to permit the following flows:

- 1,500 GPM: 90-degrees to the side of the ladder centerline
- 1,500 GPM: 45-degrees up and down from a line parallel to the centerline

Elevation	Capabilities DRY		Capabilities WET	
	Tip Load	Evenly Distributed	Tip Load	Evenly Distributed
-12 degrees to 30 degrees	1,000 lbs	1,250 lbs	500 lbs	750 lbs
30 degrees to 45 degrees	1,000 lbs	1,500 lbs	500 lbs	750 lbs
45 degrees to 60 degrees	1,000 lbs	2,000 lbs	500 lbs	1,500 lbs
60 degrees to 75 degrees	1,000 lbs	2,500 lbs	500 lbs	2,000 lbs

The above ratings shall be based on average weight of personnel on the ladder at 250 pounds each.

The ladder must meet the 2:1 safety factor requirement for material based on the weight of the ladder plus a 1,000-pound live load at the platform, flowing 1,500 GPM of water at 90 degrees to the side of the platform at zero degrees elevation.

SWIVEL

There shall be a 4" waterway swivel with 360 degrees continuous rotation. It shall be installed through the turntable and torque box to connect the aerial waterway plumbing from the water pump to the aerial. The hydraulic oil for the aerial shall be directed through a three-port hydraulic swivel with 360 degrees continuous rotation.

The swivel will be a modular three component swivel. It shall have a separate electrical swivel, hydraulic swivel, and waterway swivel that when connected shall form one component. The three individual swivels shall not affection the operations of any other part of the swivel. Individual replacement of each individual portion of the swivel shall be capable.

WATERWAY

An aerial waterway shall be provided from the base of the aerial device to the tip of the fly section. The aerial telescoping aluminum waterway shall be fabricated of aluminum and shall have three (3) tubes as follows:

- 5" outside diameter at the base section
- 4.5" outside diameter at the lower mid-section,
- 4" outside diameter at the upper mid-section

Butterfly Valve

One (1) handwheel controlled 4" butterfly valve shall be installed before the monitor at the end of the waterway.

WATERWAY COLOR

The waterway base tube color shall be painted to match the ladder sections. The inner telescopic tubes shall be left black.

ELECTRICALLY OPERATED BUTTERFLY VALVE

An Akron 4" electric butterfly valve, style 7940, shall be installed below the swivel. The valve shall be controlled through a screen at the pump panel in addition to all the Smart screens specified.

An electrically driven worm gear rotates a gear sector for smooth and easy operation with no switches inside the gear actuator to malfunction. The speed of the valve opening, and closing is preset to comply with the current NFPA 1901 Standard. The valve will operate on 12-volt apparatus electrical systems. It has a manual override with the gear driven ratio of 64:1.

WIRELESS RADIO REMOTE

There shall be a radio receiver for the aerial and monitor controls supplied at the aerial control panel and powered by the chassis 12-volt electrical system. The radio receiver shall have proportional outputs to drive the 12-volt electric proportional aerial control hydraulic valves, as well as the on/off output for monitor control.

The radio remote control transmitter/receiver shall be powered by two AA batteries and shall operate approximately 300 feet from the truck, no tether shall be required. The transmitter / receiver shall have a belt strap for comfortable operations. The remote shall control following:

Aerial Controls	Monitor Controls
Raise & Lower	Stream & Shape
Extend & Retract	Up & Down
Left & Right Rotation	Left & Right Rotation

The following items shall be included on the remote:

Enable Switch: shall allow the remote to talk to the transmitter located at the main control station. Hitting the momentary enable switch shall allow the operator to begin operations of any function on the remote. If the operator does not choose a function after engaging the enable switch the remote will cease communication with the transmitter after 5 seconds. This switch serves as a dead man switch to the controls on the remote.

Full / Half Speed Switch: there shall be a turtle and rabbit indicator on the remote to allow the operator to run the aerial operations at full (rabbit) or half (turtle) speed.

Air Horn Switch: shall allow the operator to engage the air horn on the truck (if there is one).

Emergency Stop Button: if enabled, shall lock out all operations of all controls from every operator station. This serves as a safety back up in case the operator gets the aerial into an unsafe situation. The operator will have to disengage this switch before being able to operate the aerial from any control station.

Auto Bed Switch: is a momentary switch that when engaged will rotate, retract and lower the aerial into the bedded position while avoiding cab and body collision. Once the aerial is in the 20/20/20 zone (within 20 degrees left or right of the ladder bed, below 20 degrees elevation and 20 percent retraction remaining) the ladder can now be automatically stowed.

LCD Display: shall give the operator continuous readings of the aerial information. This information shall include:

- Aerial rotation: as the aerial is rotated 180 degrees left and right of the ladder bed, positive and negative numbers shall indicate how far right or left the aerial is rotated.
- Aerial height: as the aerial extends and elevates the distance from of the top of the handrail to the ground shall be indicated on the screen.
- Aerial reach: as the aerial extends the reach shall be indicated on the screen from the tip of the aerial to the center of the turntable.
- Aerial elevation: as the aerial is elevated the elevation angle is indicated.
- Aerial extension remaining: as the aerial extends the amount of feet remaining to extend shall be indicated.
- Operational Envelop Disabled: shall be indicated on the screen if the left, right or down function is disabled.
- Overload Condition: shall display on the screen to alert the operator.
- Outrigger Not Set: is displayed if the outriggers still need to be set.
- Outrigger Not Extended: when any outrigger is not fully extended, and the jack is not supporting some of the truck weight the operator shall be notified of the exact outrigger that needs to be adjusted.
- Breathing Air (optional): shall be reported if the breathing air is low or off.

ELECTRIC OUTRIGGER CONTROLS

The aerial shall be equipped with four (4) out and down outriggers. These units shall be equipped with electric outrigger control valves activated by momentary rocker switches. The controls shall be located at the rear and to the outside of the chassis. This location shall give the operator full view and control of each outrigger.

AUTOMATIC SELF-LEVELING

The apparatus shall be equipped with an automatic self-leveling system for four (4) outriggers. The system shall operate as follows:

- A button shall be incorporated into the smart screen to be activate self-leveling
- The operator will then need to manually extend the outriggers and manually lower the jacks until they touch the ground.
- Once the outriggers are extended and the last outrigger jack touches the ground, the automatic jack leveling system will level the truck.

ALL JACKS UP SWITCH

There shall be a switch on the smart screen to raise all the outrigger jacks up at the same time. Once all aerial operations are complete, the safety pins are pulled; activate all jacks up button to stow the outrigger jacks. All the jacks will raise up until they are in their stowed position. The operator shall then manually retract the outriggers to the stowed position.

AERIAL VALVE MONITOR

Two (2) Akron Brass StreamMasterII with the Aerial Valve Monitor (AVM) shall be installed front center of the platform basket. The all-electric monitor is rated to 2000 gpm (7600 lpm) and constructed of lightweight Pyrolite. It shall have a 3-1/2" (89 mm) NH outlet and cast-in turning vanes in each elbow. The monitor shall have fully enclosed motors and gears with manual handwheel overrides for both horizontal and vertical rotation and may be operated simultaneously. The monitor is not to exceed 15" (381 mm) high and 11-5/8" (295 mm) wide. The vertical travel shall be -135 degrees to 45 degrees.

The aerial valve manifold (AVM) shall be manually operated through a gearbox to open and close the main waterway valve. The base of the AVM shall have a 4" (100 mm), 150 lb. flanged inlet. The AVM shall not increase the height of the standard monitor by more than 4.5". It shall have at least one 90-degree ball valve with 2 ½" NH threads on the outlet. There shall be less than ½ PSI friction loss through the main valve when flowing 2000GPM and it shall be rated for a maximum operation pressure of 250 PSI.

NOZZLE

An Akron Brass model 5178 electrically controlled combination solid stream and fog nozzle shall be provided at the end of the monitor. The nozzle shall be constructed of Pyrolite, with a 2" orifice solid bore, and a fog flow of 1500 GPM at 80 PSI. The nozzle shall have a 12-volt electric motor, a 3.5" NH inlet, and built-in stream shaper, and shall not exceed 14-13/16" in length or 24 lbs. in weight.

Discuss with FD maybe just one (1).

STACKED TIPS

One (1) set of Akron #2499 straight bore tips shall be provided for the monitor as follows:

- One (1) 2"
- One (1) 1-3/4
- One (1) 1-1/2"
- One (1) 1-3/8"
- One (1) 3-1/2" female to 2-1/2" male NH adapter
- One (1) 3-1/2" NH male threaded base mounting bracket.

MONITOR COLOR

The monitor shall be Akron standard red in color.

STREAM SHAPER

An Akron Brass item 34850014 Mini Stream Shaper shall be shipped loose in the cab. It shall be constructed of Pyrolite, have a 3.5" NH knurled female inlet, a 3.5" NH male outlet, full length offset extruded vanes for stream shaping, shall not exceed 4" in length, or 2 lbs. in weight.

2.5" RELIEF VALVE

A 2.5" relief valve shall be installed above the turntable.

Converters:

The aerial shall be supplied with converters to help allow proper voltage and amperage from the batteries to the turntable and platform.

INTERCOM

The two-station intercom communication system shall have the master station at the platform aerial turntable and secondary intercom and speaker at the platform basket area.

The master station shall have a volume control and a push-to-talk button. The remote station shall operate "hands free" and constantly transmit to the master station and speaker unless the master station push-to-talk button is pressed.

The intercom shall be designed for exterior aerial application. Each station shall have a weather resistant and protective housing and water-resistant speakers.

Fire Research Intercom

Fire Research ACT Intercom model ICA900-112 two-way system shall be installed. The intercom kit shall include two control modules, one that is hands free and one that has a push-to-talk button, two speakers, and cables. The control modules shall have an LED volume display and push-button volume control. The hands-free module shall constantly transmit to the other module unless the push-to-talk button is pressed.

The intercom shall be designed for exterior use. The control module shall be no more than 2 7/8" high by 5 1/8" wide by 1 7/8". The speaker shall be no more than 5 1/8" high by 5 1/8" wide by 1 1/2" deep. The power requirements for each control module with a speaker shall not exceed 1/2 amp at 12 VDC.

LIGHT HOUSING COLOR

All light housing shall be white in color.

TRACKING LIGHTS

A FireTech Hi-Viz, model number FT-MB-33-FT-W light bar shall be installed on the bottom of the cradle cross bar to serve as the tracking lights and illuminate the ladder sections. The lights shall be activated from the tracking light switch on the main control station.

TIP LIGHTS:

Two FireTech HiViz area and work lights Model # FT-WL-X-5H-FT-W shall be installed on the front of the platform. The 35-watt +12 DC, 2.91 Amp, light head configuration shall incorporate 5 white LED's. High-quality construction and components enable the light to withstand vibration up to 21Grms. Build-in reverse polarity protection helps prevent accidental damage caused by incorrect installation. Electronic thermal management ensures that if the light is subjected to a massive heat overload, that a self-protection protocol is engaged to reduce the light output, until such time as the heat overload retreats to normal parameters. The HiViz lights shall be activated from the tracking lights switch on the main control station. The FT-WL-X-5H-FT-W lights shall have 4,000 raw lumens (3,305 effective lumens).

DOT LIGHTS

Five (5) amber LED DOT travel lights shall be installed three (3) on the front of the platform basket and one (1) on each side. The lights shall turn on with all other chassis DOT lights.

WARNING LIGHTS

The platform basket warning lights shall be the Whelen TION T-Series. The warning light shall include an internal flasher with 25 Scan-Lock™ flash patterns including steady burn with seven Modes of Operation with optional white override.

PLATFORM WARNING LIGHTS QUANITY

Four (4) Whelen LED lights shall be mounted on the platform basket, two on the front and one on each side of the basket.

PLATFORM WARNING LIGHTS ACTIVATION

The platform baskets front warning lights shall be controlled from a switch in the cab when the aerial master is not activated. With the aerial master engaged ***ALL*** warning lights on the platform shall be controlled from a switch on the turntable control stand.

PLATFORM WARNING LIGHTS COLOR

The Whelen ION T-Series super-LED platform basket warning lights are to be red in color, part #TIONR.

SCENE LIGHTS

Two (2) Fire Research Spectra Max LED Scene Light model SPA260-K20 surface mount light shall be installed under the platform. The light shall be mounted with four (4) screws to a flat surface and require a 4 3/4" high by 6 3/8" wide cutout for the electronics box. It shall be no more than 6" high by 14 1/2" wide and have a profile of less than 1 3/4" beyond the mounting surface. The light shall be activated from the tip light switch at the main control station and from the scene light switch in the platform.

The lamphead shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spotlight beam pattern. It shall operate at 120 volts AC, draw 1.4 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance. The lamphead shall be powder coated.

TELESCOPIC SCENE LIGHT

Two (2) Fire Research Spectra Max LED Scene Light model SPA540-K28 side mount pull up telescopic light shall be installed on the platform. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. An internal brake shall slow the extension pole during lowering. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 2 3/4" offset. The light shall be activated from the tip light switch at the main control station and from the platform light switch in the platform.

The lamphead shall have 72 ultra-bright white LEDs, 60 for flood lighting and 12 to provide a spotlight beam pattern. It shall operate at 120 volts AC, draw 2.8 amps, and generate 28,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance.

The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 5 3/8" high by 14" wide by 3 3/4" deep and have a heat resistant handle.

PLATFORM RECEPTACLE

One (1) 120-volt AC circuit shall be run through the collector ring swivel, with one (1) with a 20-amp breaker, 15-amp receptacle mounted in the platform basket. Only one box is needed. The receptacle(s) shall be a twist-lock three prong type with a weatherproof cover.

RUNG LIGHTING

The ladder rungs of each aerial section shall be equipped with 12-volt LED luma-bar lighting. The luma-bar shall run the full length of the climbing portion of each section on each side of the aerial. These lights shall be activated from the turntable tracking light switch. The ladder rung lights shall be "red" in color.

OPTICOM WIRING

There shall be an Opticom brand LED traffic control emitter mounted on the front of the platform. Rosenbauer Aerials will run one (1) wire from the back of the cab, 14-gage, through the swivel, then two (2) conductors of 18 gage (or equivalent) up the aerial to the platform, to power the Opticom emitter. The wiring shall be labeled at both ends.

AERIAL HYDRAULIC SYSTEM

The hydraulic system shall have a load sensing, variable gallonage, hydraulic piston pump with a 12-volt pressure reducing system. To reduce the normal time for aerial set up, the hydraulic pump shall be of the load sensing design. The hydraulic system shall have sufficient oil flow to provide the capability of performing multiple functions simultaneously without reducing operating speeds of the selected functions.

The hydraulic oil for the aerial shall be directed through a hydraulic swivel with 360 degrees continuous rotation.

Enclosed in the hydraulic swivel shall be a minimum of twenty (20) electrical collector rings and a maximum of thirty-six (36) electrical collector rings with 360-degrees continuous rotation.

The hydraulic pump shall be large enough to provide oil to meet all the requirements needed for aerial and outrigger operation standards.

A pressure reducing valve set at 500 PSI above the system pressure shall be connected to the hydraulic pump.

This pressure reducing valve shall be a safety device for hydraulic pump failure. The hydraulic oil shall be directed through high pressure hydraulic hose and tubing.

The hydraulic system shall be designed to direct oil to the outriggers only while the ladder is in the bedded position. The oil can be directed to the aerial operation only when all the outriggers are supporting sufficient load. This operation is made available through the use of electrical diverter valves with a manual override system for safety backup.

Hydraulic System Installation

The non-sealing moving parts of all hydraulic components, whose failure results in motion of the aerial device, shall have a minimum bursting strength of four times the maximum operating pressure to which the component is subjected.

Dynamic sealing parts of all hydraulic components, whose failure results in motion of the aerial device, shall not begin to extrude or otherwise fail at pressures at or below two times the maximum operating pressure to which the component is subjected.

Static sealing parts of all hydraulic components, whose failure results in motion of the aerial device, shall have a minimum bursting strength of four (4) times the maximum operating pressure to which the component is subjected.

All hydraulic hose, tubing, and fittings shall have a minimum bursting strength of at least three times the maximum operating pressure to which the components are subjected. All hydraulic hoses shall have a stamped embedded on one end of the metal fitting to include the date, technicians creating the hose identification number, PSI of hose and the company the hose was made by. This shall assist a mechanic in determining the age of the hydraulic hose.

All other hydraulic components shall have a minimum bursting strength of at least two times the maximum operating pressure to which the components are subjected.

The hydraulic system shall be provided with an oil pressure gauge at the control station position.

Hydraulic Reservoir

The hydraulic system shall be supplied by a 40-gallon oil tank with a 10-micron filter on the return line and a 100-mesh filter on the pump inlet side.

A means for checking and filling the hydraulic reservoir shall be readily accessible.

The fill location shall be conspicuously marked with a label that reads "Hydraulic Oil Only."

Instructions for checking and filling the hydraulic reservoir shall be provided.

The hydraulic system components shall be capable of maintaining, under all operating conditions, oil cleanliness and temperature that comply with the component manufacturer's recommendations.

HYDRAULIC GATED DRAIN LINE

One (1) quarter turn shut-off valve shall be connected in the drain line of the hydraulic oil tank.

HYDRAULIC GATED DRAIN LINE

One (1) quarter turn shut-off valve shall be supplied between the suction line of the hydraulic oil tank and the inlet of the hydraulic pump.

HYDRAULIC OIL ISO 32

United MV Extreme Hydraulic Oil is a multi-grade hydraulic lubricant engineered for extreme temperature ranges. The low pour point of -58° F enables this fluid to flow quickly in extreme cold climates, avoiding pump cavitation that results in pump wear. The high viscosity index of this fluid addresses the extreme hot climates and operating temperatures, thinning out less at high temperatures than typical hydraulic fluids.

United MV Extreme Hydraulic Oil is formulated with rust inhibitors, oxidation inhibitors, anti-wear agents and anti-foam additives. This fluid is fortified with a friction modifier lubricity agent necessary in hydraulic systems operating wet clutches and/or wet brakes, commonly found in industrial cranes and other off-road equipment.

United MV Extreme Hydraulic is has very good water separation so that contaminant water may be drained from the reservoir when the machine is at rest. In-plant filtration systems ensure ISO cleanliness standards during blending and container filling, providing a clean product for your expensive hydraulic system.

ELEVATION SYSTEM

The hydraulic elevation system shall have two (2) 7" inside diameter cylinders that have 4.50" diameter rods and a 42" stroke. The elevation system shall elevate the aerial from -12 degrees to +75 degrees. Each cylinder shall have lock valves connected directly to the barrel of the cylinder. The cylinders shall be equipped with spherical bushings to minimize cylinder rod wear.

A pressure-reducing valve shall limit the force of the aerial when lowering and the system pressure limits the force when elevating the aerial.

All hydraulic cylinders utilized in the aerial elevation and extension system shall be commercially available and shall be of standard sizes and lengths rather than special sizes or of proprietary manufacture. This requirement is important since it assures quicker parts availability, shorter down time, and less costly replacement parts for cylinders.

PTO

An electrical start-stop "hot shift" PTO shall be mounted to the transmission. The PTO shall be connected to the hydraulic pump and shall supply power for all aerial and outrigger operations. Electrical safety wiring shall require that the vehicle be in neutral and the parking brake set before the PTO will operate. A "PTO Engaged" indicator light is installed in the cab of the apparatus.

EMERGENCY BACK UP PUMP

An emergency hydraulic system shall be provided for capability for limited ladder functions and to stow the ladder and outriggers in case of prime motor failure.

The emergency system shall be powered from the 12-volt electrical system from the apparatus battery system and shall not be load managed.

ROSENBAUER FINANCIAL STABILITY RESPONSE

FINANCIAL STABILITY SPECIFICATIONS

With high-profile instances of fire apparatus manufacturers encountering financial difficulties, it is imperative that fire departments be diligent in evaluating the financial position of the companies they solicit to build on their emergency response vehicles. A contract entered into with a company on shaky ground is a dangerous prospect, since conducting business with a manufacturer in such condition could open the department to monumental problems.

Take, for instance, the growing theme of manufacturers *requiring* as opposed to *offering* pre-payment and progressive payment options with a corresponding discount off the price of a vehicle. Such offers are made with an ulterior motive in mind, as it can be generally inferred that manufacturers requiring pre-payments and progressive payments do so because they need your cash *today* to fund production of other vehicles already in the backlog.

Should problems arise, as has been the case in situations too numerous to mention, your department risks losing any down payments already made or even the entire cost of a piece of equipment should certain pre-pay discount situations go awry.

While pre-payment discounts may be enticing, it is important to know just how stable the manufacturer seeking your funds is before you make that commitment. If you enter into one of these agreements and the manufacturer hits a rough patch, it is you that will be hurting, because your funds may not be recoverable. However, if you enter into a contract with a financially sound manufacturer, you will reap all of the benefits of a well-built truck at a lower cost. You may equally, by taking advantage of the time-value of money, be able to afford more truck than initially thought, because funds saved by leveraging pre-payment options could allow you get some added features that you might not necessarily have been able to afford.

With this in mind, it must be noted that Rosenbauer is a company with rock-solid financial stability. This is a statement not made lightly, as we can prove it to you. We can provide language that you can insert into your bid specifications that stipulates that in order for bids to be accepted by a fire department, the company bidding must meet several fiscal criteria.

The first criteria call for the successful bidder to meet a debt-to-equity ratio not exceeding a 2.0 rating. Rosenbauer presently stands at a 1.51 rating, which is well-below the accepted rating. This low number results from Rosenbauer owning more assets with a marginal debt service. This means we are not using lenders to fund our operations, nor our growth.

The second requirement is that the debt coverage ratio of the successful body builder exceeds a 100 rating. The higher the number, the better able a company is to meet its payment obligations with banks and creditors.

Rosenbauer's number is at 279.6, which is nearly three times the required amount. The higher the debt coverage ratio, the easily and more fluidly a company is positioned to pay its monthly obligations and operating costs.

The third criteria require that the equity ratio of the successful bidder must exceed .30 rating. A higher equity ratio indicates that the body builder has increased flexibility to meet its financial obligations which translates into greater financial stability. Rosenbauer currently has an equity ratio of .387 which is well above the accepted rating and an excellent indicator of financial strength.

When exploring and evaluating various manufacturers to consider for building your apparatus, there is little doubt you will find one that stands on as firmly a financial ground as Rosenbauer. While others are experiencing stressful issues that raise doubts as to the company's long-term viability, Rosenbauer continues to demonstrate a strengthening of its financial position in the apparatus manufacturing industry. Because Rosenbauer meets and exceeds all the above-stated financial bid requirements, we are best positioned to ensure customers of a strong relationship with the company, which cannot be claimed by most of our competitors in this volatile market.

The Rosenbauer America Dun and Bradstreet number is 02-447-3584. To acquire a Dun and Bradstreet report, telephone them at 1-800-234-3867 (in Canada 800-463-6362) or visit their web site address at www.dnb.com.

Dun and Bradstreet is nationally recognized, independent financial analysis company.

APPARATUS WARRANTY AND MANUALS SPECIFICATIONS

PAINT WARRANTY FIVE YEAR

The PPG paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of FIVE (5) years beginning the day the vehicle is delivered to the purchaser.

The full apparatus chassis, manufactured and painted by Rosenbauer Motors, LLC, shall be covered for the following paint failures as outlined on the guarantee certificate:

- Peeling or delaminating of the topcoat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by cracking, checking, or hazing.
- Any paint failure caused by defective PPG Fleet Finishes, which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

Note: Surety bond, if required, will cover standard one-year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

CAB STRUCTURE WARRANTY

The cab structure shall be warranted for a period of ten (10) years with the complete detail of the warranty outlined in a document provided upon request.

TRANSMISSION WARRANTY

The Allison EVS transmission shall be warranted for a period of five (5) years with the complete detail of the warranty outlined in a document provided upon request.

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever comes first, with the complete detail of the warranty outlined in a document provided upon request.

FRAME WARRANTY

The frame and cross members shall carry a lifetime warranty with the complete detail of the warranty outlined in a document provided upon request.

FRONT AXLE WARRANTY

The front axle shall be warranted by Hendrickson for five (5) years or 500,000 miles, whichever comes first,

under the general service application.

REAR AXLE WARRANTY

The rear axle(s) shall be warranted by Meritor for five (5) years with unlimited miles under the general service application.

CAB AND CHASSIS WARRANTY

The cab and chassis shall carry a twenty-four (24) month warranty providing limited parts and labor from the date the complete apparatus is delivered to the end user. The complete detail of the warranty shall be outlined in a document provided upon request.

STATIC LOAD SEAT TEST INFORMATION

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

CAB TEST INFORMATION

The cab as built shall have successfully completed the pre-load side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests shall have been witnessed by and attested to by an independent third party. The test results shall have been recorded using cameras, high speed imagers, accelerometers, and strain gauges.

Documentation of the testing shall be provided upon request.

CAB INTEGRITY CERTIFICATION

The manufacturer shall provide a cab crash test certification with this proposal including SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading for Heavy Trucks and SAE J2420 COE Frontal Strength Evaluation -

Dynamic Load for Heavy Trucks.

CAB TEST INFORMATION

Roof Crush

The cab shall be subjected to a roof crush test of 120,000-pounds exceeding the requirements of ECE 29 criteria.

The 120,000-pound requirement is important to ensure to most structurally sound and safe cab in the event of a crash or roll over.

Side Impact

The cab shall be subjected to dynamic moving barrier slammed into the side of the cab at 7.5 mph, striking with an impact of 15,157-foot pounds of energy. This test will closely represent the forces a cab would incur in a rollover incident.

Frontal Impact

The cab shall withstand a frontal force produced from a moving barrier slammed into the front of the cab traveling at 10.5 mph, striking with an impact of 42,587-foot pounds of energy.

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

OPERATION AND PARTS LIST MANUALS

Each cab and chassis shall include two (2) electronic copies of the operation manuals and parts listings. The manuals shall include information specific to the components included on the apparatus.

ENGINE AND TRANSMISSION MANUALS

One (1) paper copy of the specific engine and transmission manuals shall accompany each cab and chassis.

AS BUILT WIRING DIAGRAMS

Each cab and chassis shall include one (1) digital copy of the wiring schematics and component wiring. The wiring schematics shall be developed on a software program such as VeSys Design or equal that provides continuity in files and diagram. The software shall allow you to trace through the design schematics to identify cross referenced items such as in-line connectors and wires. The software shall be interactive which allows you to view one electrical assembly drawing, click on a wire routing and the program will take you to the related circuit assembly or termination point. The software shall also provide a searchable function allowing you to view multiple diagrams using readily available pdf viewers. The digital copy of the wiring schematics shall be compatible with handheld devices such as I-Pads.

USB STORAGE

For ease of service the chassis shall come with an on-board USB flash drive. The flash drive shall have a minimum of 8 GB of storage capacity; and shall be located behind the access panel on the driver side kick panel, next to the data port for the engine.

The following items shall be stored on the Flash Drive. No Exception.

- As built wiring diagrams
- Plumbing diagram
- Chassis, body, and aerial manuals

The USB shall be accessible through a 3-foot (3') USB-A to USB-B cable.

BODY WARRANTY

We warrant each new motorized fire apparatus manufactured by ROSENBAUER AMERICA, LLC for a period of ONE YEAR from the date of delivery, except for chassis and other components noted herein.

Under this warranty we agree to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of ROSENBAUER AMERICA, LLC, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within one year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps, and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the manufacturer by the customer.

This warranty will not apply to any fire apparatus that has been repaired or altered outside our factory in any way, which in our opinion might affect its stability or reliability.

This warranty shall not apply to those items that are usually considered normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment of minor auxiliary pumps or reels.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability in connection with the sales of our apparatus unless made in writing by ROSENBAUER AMERICA, LLC.

EXT MODULAR BODY WARRANTY - LIFE-TIME

Rosenbauer America, LLC warrants to the original purchaser that the all-aluminum body, fabricated by Rosenbauer America, LLC, under normal use and with reasonable maintenance, be structurally sound and will retain structural integrity for the life of the vehicle. Warranty coverage is transferable to second owner, if

applicable, with proper notification made to Rosenbauer America, LLC.

This warranty does not apply to the following items that are covered by a separate warranty: paint finish, hardware, moldings, and other accessories attached to this body. In addition, this warranty does not apply to any part or accessory manufactured by others and attached to this body.

ROSENBAUER AMERICA, LLC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE ALUMINUM BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND HEREBY DISCLAIMED.

Rosenbauer America, LLC will replace without charge, repair, or make a fair allowance for any defect in material or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Rosenbauer America, LLC elects to repair this body, the extent of such repair shall be determined solely by Rosenbauer America, LLC, and shall be performed solely at the Rosenbauer America, LLC factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

Rosenbauer America, LLC will not be liable for damages and under no circumstances will its liability exceed the price for a defective body. The remedies set forth herein are exclusive and in substitution for all other remedies to which the purchaser would otherwise be entitled.

Rosenbauer America, LLC will be given a reasonable opportunity to investigate all claims. The purchaser must commence any action arising out of, based upon, or relating to agreement or the breach hereof, within twelve months from the date the cause of the action occurred.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

ALUMINUM SUBFRAME WARRANTY

Subject to the provisions, limitations and conditions set forth in this warranty, Rosenbauer America, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser that each new aluminum body subframe (exclusive of paint finish and hardware) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity for the lifetime of the body.

Warranty coverage is transferable to second owner, if applicable, with proper notification made to Rosenbauer America, LLC.

This warranty is conditioned upon normal use and reasonable maintenance of such subframe; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence, accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms or the warranty, the extent of that repair shall be determined

solely by the seller and shall be performed solely at Rosenbauer America, LLC or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF ROSENBAUER AMERICA, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

PAINT WARRANTY TEN YEAR

The PPG paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of TEN (10) years beginning the day the vehicle is delivered to the purchaser.

The full apparatus body, manufactured and painted by Rosenbauer America, LLC, shall be covered for the following paint failures as outlined on the guarantee certificate:

- Peeling or delaminating of the topcoat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by cracking, checking, or hazing.
- Any paint failure caused by defective PPG Fleet Finishes, which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

LETTERING WARRANTY

Rosenbauer America, LLC warrants to the original purchaser only, that the lettering and striping, installed by Rosenbauer America, LLC, will remain free from defects for a period of one (1) year under normal use.

Rosenbauer America, LLC will replace without charge, repair or make a fair allowance for any defect in material

or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Rosenbauer America, LLC elects to repair this item, the extent of such repair shall be determined solely by Rosenbauer America, LLC, and shall be performed solely at the Rosenbauer America, LLC factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

PUMP WARRANTY

Waterous warrants, to the original buyer only, that products and parts manufactured by Waterous will be free from defects in material and workmanship under normal use and service for a period of seven (7) years from the date the product is first placed in service, or seven and one half 7-1/2 years from the date of shipment by Waterous, whichever period will be the first to expire; provided the buyer notifies Waterous in writing, of the defect in said product within the warranty period, and said product is found by Waterous to be conforming with the aforesaid warranty.

When required in writing by Waterous, defective products must be promptly returned by the buyer to the Waterous Company at Waterous' plant at South St. Paul, Minnesota, or at such other place as may be specified by Waterous with transportation and other charges prepaid. A returned materials authorization (RMA) is required for all products and parts and may be requested by phone, fax, or mail. The previously mentioned warranty excludes any responsibility or liability of Waterous for:

- Damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes or improper maintenance, or attributable to written specifications or instructions furnished by buyer.
- Defects in products manufactured by others and furnished by Waterous hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, Waterous will assign to the buyer, if requested by Buyer
- Any product or part, altered, modified, serviced, or repaired other than by Waterous, without its prior written consent.
- The cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.
- Normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, etc.)

This warranty is subject to Waterous' conditions of sale (Waterous Company form number F-2190 as currently in effect all of which are herein incorporated and by this reference made a part hereof.
All other warranties are excluded, whether expressed or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. Waterous shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from breach of any of the terms of this limited warranty or from the sale, handling, or use of any other product or part. Waterous' liability hereunder, either for breach of warranty or for negligence, is expressly limited at Waterous' option:

- To the replacement at the agreed point of delivery of any product or part, which upon inspection by Waterous or its duly authorized representative, is found not to conform to the limited warranty set forth above, or
- To the repair of such product or part, or

- To the refund or crediting to buyer of the net sales price of the defective product or part.

Buyer's remedies contained herein are exclusive of any other remedy otherwise available to the buyer.

STAINLESS STEEL PLUMBING WARRANTY

Subject to the provisions, limitations and conditions set forth in this warranty, Rosenbauer America, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser only that stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of the delivery and shall terminate upon the transfer of possession or ownership by original purchaser.

This warranty is conditioned upon normal use and reasonable maintenance of such plumbing; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence, accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms or the warranty, the extent of that repair shall be determined solely by the seller and shall be performed solely at Rosenbauer America, LLC or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF ROSENBAUER AMERICA, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

BODY MANUAL - DIGITAL

Rosenbauer shall provide with the vehicle upon delivery one (1) digital copy of the delivery manual. The manual shall include sections that contain the following:

- Individual component manufacturer instruction and parts manual
- Warranty forms for body

- Warranty forms for all major components
- Warranty instructions and format to be used in compliance with warranty obligations
- Wiring diagrams
- Installation instructions and drawings of major parts
- Visual graphics and electronic photos of the installations of major parts
- Necessary normal routine service forms, publications, and components of body portion of apparatus
- Technical publications on training and instructions for major body components
- Warning and safety related notices for personnel protection

ELECTRICAL SYSTEM MANUAL - DIGITAL COPY

Rosenbauer shall provide with the vehicle upon delivery (1) digital copy of the electrical system manual. This manual shall include sections that contain the following:

- Individual component manufacturer instruction and parts manuals
- Warranty forms for the components
- Warranty instructions and format to be used in compliance with warranty obligations
- Wiring diagrams
- Installation instruction and drawings for major parts
- Visual graphics and electronic photos for the installation of major parts
- Necessary normal routine service forms, publications, and components for the installed electrical components
- Technical publications for training and instruction on major components
- Warning and safety related notices for personnel protection
- Cab and chassis manuals on parts, service and maintenance shall be provided

Rosenbauer Minnesota, LLC

DEPARTMENT: **SPARKS, NV**

Vertical Center of Gravity

	Height (Inches)	Bottom From Frame Rails (Inches)	CG Above Frame (Inches)
Tank & Water	0	5	0.00
Hose	0	62.5	62.50
Pump	20	0	10.00
Body	79	-16.5	19.05
Ladders	24	1	13.00
Chassis	NA	NA	1.00
Personnel	52	6	32.00
NFPA Equipment	60	-14.5	15.50
Misc. Equipment	NA	NA	22.95
Aerial	NA	NA	34.00

Combined CG Above Frame		**36.02**
Frame Rail Height		41.00
CG Above Ground		**77.02**
Track Width	72.00	
CG % of Track Width		**106.98%**

(Per NFPA 1901 this must be less than 80% or have ESC.)

Rosenbauer Minnesota, LLC

DEPARTMENT: **SPARKS, NV**

Wheel Base	260
C A	190
Cab to Pump Compartment	3
Pump Compartment	81
Tank Length Lower	0
Tank Length Upper	0
Body Length	263
Tank Capacity	0
Aerial Size	101-3 RMP-D-ACP (109" RA-2-CL)

Percent of Weight to Front Axle		
Water	Body	Pump
#DIV/0!	-6.73%	56.73%
	Aerial	Hose Bed
	8.08%	-60.77%

	TOTAL WT	FRONT WT	REAR WT
Water	0	0	0
Body	7490	-504	7994
Pump	1800	1021	779
Aerial	34380	2777	31603
SUB TOTAL	**43670**	**3294**	**40376**
Chassis	26109	16235	9874
SUB TOTAL	**69779**	**19529**	**50249**
NFPA Equipment Load	2500	579	1921
NFPA Personnel Load	1000	927	73
Hose Load	0	0	0
Ground Ladders	374	-24	398
Miscellaneous Equipment	1267	516	751
TOTAL	**74,920**	**21,527**	**53,393**
GAWR	**84,000**	**24,000**	**60,000**
% Load		**89.7%**	**89.0%**
% Distribution		**28.73%**	**71.27%**
Recommended GAWR		**24,000**	**60,000**

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NOTE: Weights shown are approximate. Chassis weights MUST BE VERIFIED by the DEALER.
Dealer will be responsible for confirming that the axles are adequate for the proposed apparatus.

FIRE DEPARTMENT NAME Sparks, NV

Wheel Base:	260	in.
Tire Size:	425	
Bumper Extension:	18	in.

OUTSIDE CURB TO CURB TURNING RADIUS

Input wheelbase?	260	in.
Input front wheel INSIDE turn angle?	45	degrees
Input offset from kingpin to outside of wheel	16	

Turn radius is 34.94 ft.

WALL TO WALL TURNING RADIUS

Input wheelbase?	260	in.
Input length of extension?	18	in.
Input width of extension?	101	in.
Input front wheel INSIDE turn angle?	45	degrees
Input radius at front corner?	12	

Turn radius is 39.33 ft.