



Columbus
Fire
Department
Specifications
for a
20'
2016 Rescue

Bid Requirements 2

Bid Bond 2
Certificate of Insurance 2
Dealer Requirements 2
Delivery 2
Equipment Capacity 2
Exceptions 2
Intent of Specifications 3
ISO Compliance 3
NFPA Compliance 3
Penalty Clause 3
Proposal Price 3
Service Requirements 3

Chassis 4

Brake System 4
Cramp Angle 4
Frame 4
Front Axle 4
Front Axle Seals 4
Front Axle Brakes 4
Front Axle Suspension 4
Front Bumper 4
Bumper Tray 4
Lid, Bumper Tray 4
Winch 4
Hydraulic Hose Reel two (2) - Hannay 5
Lead/Supply Lines 5
Front Tires 5
Front Wheels 5
Laser Alignment 5
Steering 5
Rear Axle 5
Rear Axle Brakes 5
Rear Axle Suspension 5

<i>Rear Differential</i>	5
<i>Rear Tires</i>	5
<i>Rear Wheels</i>	5
<i>Stability Enhancement (Optional)</i>	6
<i>Top Speed</i>	6
<i>Warranty – Chassis</i>	6

Cab **6**

<i>Cab Dash</i>	6
<i>Cab Design (known as a Custom Cab)</i>	7
<i>Cab Dimensions</i>	7
<i>Cab Doors</i>	7
<i>Cab Door Safety</i>	7
<i>Cab Handrails</i>	7
<i>Cab Instruments and Controls</i>	8
<i>Camera Back-Up</i>	8
<i>Message Center</i>	8
<i>Cold Weather Cab Insulation</i>	8
<i>Cab Steps (Optional)</i>	8
<i>Cab Tilt System</i>	8
<i>Cab Crashworthiness Requirement</i>	9
<i>Compartment Open “Ajar” Light</i>	9
<i>Engine Cover</i>	9
<i>Floor Covering</i>	9
<i>Grab Handles</i>	9
<i>HVAC</i>	10
<i>Interior Door Locks</i>	10
<i>Interior Ceiling and Trim</i>	10
<i>Interior Lighting</i>	10
<i>Mirrors</i>	10
<i>Multiplex Display</i>	10
<i>Multiplex Electrical System</i>	11
<i>NFPA Required Testing of Electrical System</i>	11
<i>Paint - Exterior</i>	11
<i>Power Circuit 12vdc</i>	11
<i>Rear Cab Wall</i>	12

<i>Seating</i>	12
<i>Rugged Duty Interior</i>	12
<i>Steering Wheel and Column</i>	12
<i>Sun Visors</i>	12
<i>Windshield Wipers</i>	12
<i>Wiring</i>	13
<i>Vehicle Data Recorder / Seat Belt Warning System</i>	13
<i>Wiring Connectors</i>	13
<i>Wiring Protection</i>	13

Power Train 13

<i>Air Dryer</i>	13
<i>Air Inlet</i>	13
<i>Air Lines</i>	13
<i>Air System</i>	14
<i>Alternator</i>	14
<i>Batteries</i>	14
<i>Battery Charger</i>	14
<i>Coolant</i>	14
<i>Coolant Hoses</i>	14
<i>Cummins After-treatment System</i>	14
<i>DEF Tank</i>	14
<i>Engine</i>	14
<i>Fast Idle System</i>	15
<i>Fuel Tank</i>	15
<i>Fuel/Water Separator</i>	15
<i>Heater Line Shut Off Valves</i>	15
<i>Jacobs Engine Brake</i>	15
<i>Radiator</i>	15
<i>Transmission</i>	15
<i>Transmission Cooler</i>	15

Non Walk-In Rescue Body 16

<i>Apparatus Body Material</i>	16
<i>Front Body Trim</i>	16
<i>Roof Configuration</i>	16

<i>Roof Compartments</i>	16
<i>Tailboard</i>	16
<i>Air Cascade Bottle Storage</i>	16
<i>Compartments</i>	16
<i>Rear Full Height Compartment</i>	16
<i>R-1 Compartment</i>	16
<i>R-2 Compartment</i>	17
<i>R-3 Compartment</i>	17
<i>R-4 Compartment</i>	17
<i>L-1 Compartment</i>	17
<i>L-2 Compartment</i>	17
<i>L-3 Compartment</i>	18
<i>L-4 Compartment</i>	18
<i>Air Connection</i>	18

<i>DOT Apparatus Lights</i>	18
<i>Fender Skirts</i>	18
<i>Front Tow Eyes</i>	18
<i>Mud Flaps</i>	18
<i>Rear Tow Eyes</i>	18
<i>Reflective Striping</i>	18
<i>SCBA Bottle and Fire Extinguisher Storage</i>	18
<i>Underbody Lighting</i>	18
<i>Wheel Chocks</i>	18

Lighting 19

<i>Generator</i>	19
<i>Breaker Box</i>	19
<i>Light Tower</i>	19
<i>Electric Cord Reel</i>	20
<i>Receptacle</i>	20
<i>Scene Lights –12 Volt LED</i>	20
<i>12V LED Flood Light - Brow</i>	21

WARNING LIGHT PACKAGE..... 21

<i>Warning Light Bar</i>	21
--------------------------------	----

Lower Level Warning Light Package 21
Upper Level Warning Lights 21
Directional Traffic Warning Light..... 22
Electronic Siren..... 22
Mechanical Siren..... 22
Siren Speaker..... 22
Air Horns and Switches 22
Alternating Headlights..... 22
Warning Switching..... 23

General **23**

NFPA Compliance..... 23
Manuals 23
Training..... 23

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Bid Requirements

Bid Bond

A bid security in the form of a Bid Bond, cashier's check, or certified check made payable to The City of Columbus in the amount of ten percent (10%) of the total bid shall be required.

Certificate of Insurance

Each bidder shall furnish, with their proposal, a Certificate of Product Liability Insurance for a minimum of ten (10) million dollars.

The Certificate must be made out to The City of Columbus and must be original. Submission of a non-original Certificate or a Certificate provided that is not made out to The City of Columbus will not meet the requirements of this section.

Dealer Requirements

The City of Columbus intends to only purchase apparatus through an Indiana dealer.

Delivery

The bidder shall state the time required for delivery of the completed unit on the proposal page. The completed unit shall be delivered to The City of Columbus with full instructions provided to Fire Department personnel on operation, care and maintenance of apparatus at The City of Columbus's location.

Equipment Capacity

Equipment allowance on the apparatus shall be 6000 lbs. This allowance is in addition to the weight of the hoses and ground ladders listed in the shop order as applicable.

Exceptions

The following apparatus specifications are considered minimum design and construction standards. Any proposals being submitted not in compliance with these specifications shall so state on the bid proposal page. An attached page shall be included with the bid stating areas of non-compliance. The reference must include page number, paragraph, and the exact nature of the exception.

Failure to follow this format, provided for the convenience of The City of Columbus, will render the vendor's proposal non-responsive and ineligible for award of contract.

Submit to:

City of Columbus
Clerk-Treasurer's Office
City Hall
123 Washington Street
Columbus, IN 47201

Submit by:

10:00 a.m. Eastern on November 1, 2016

Contact:

Deputy Chief Andy Lay
Telephone: (812) 376-2586
play@columbus.in.gov

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Intent of Specifications

It is the intent of these specifications to clearly describe the furnishing and delivery to The City of Columbus, a complete apparatus equipped as specified.

The apparatus shall conform to the National Fire Protection Association Standard for Automotive Fire Apparatus, number 1901, in its most recent edition, unless otherwise specified in this document.

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

Each bid must be accompanied by a set of detailed contractor's specifications consisting of a detailed description of the apparatus and equipment proposed.

Bids will be addressed and submitted in accordance with the instructions provided on the cover sheet. The words "Fire Apparatus Proposal", the date, and bid opening time shall be stated on the front of the bid envelope.

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

ISO Compliance

The manufacturer shall operate a Quality Management System meeting the requirements of ISO 9001:2000.

A copy of the manufacturer's certificate of ISO compliance for each manufacturing facility shall be provided with the bid.

NFPA Compliance

The supplied components of the apparatus shall be compliant with NFPA 1901, most recent edition.

Penalty Clause

The penalty of \$200 per day for each day after a grace period of 30 days that will start on the date of delivery given by the successful bidder at the time the contract is signed.

Proposal Price

Each bidder's proposal must include all items required in the specifications unless a specific exception is taken.

Service Requirements

Each bidder shall supply, with their proposal, detailed information on the bidder's ability to perform routine and emergency service on the apparatus after delivery. Service capabilities will be one of the criteria for award of this contract.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Chassis

Brake System

The vehicle shall be equipped with air operated brakes and an anti-locking brake system (ABS) meeting the current Federal Motor Vehicle Safety Standard and test requirements of NFPA

Cramp Angle

The chassis shall have a cramp angle of no less than 45 degrees.

NO EXCEPTIONS

Frame

The frame shall be designed to industry standards using C Channel frame design with cross members. To prevent corrosion from road chemicals the frame shall be galvanized.

Front Axle

The front axle shall be manufactured by Meritor with an axle capacity not less than 18,700 lbs.

Front Axle Seals

The front axle seals shall be supplied on the axle from the manufacturer. The spindles shall be equipped with transparent cover for oil level inspection.

Front Axle Brakes

The front brakes shall be 17" Disk Brake design; air operated heavy duty brakes for increased stopping power and brake life in severe braking applications

Front Axle Suspension

The front suspension shall be a pin and shackle design. All front spring pins shall be ground heat treated steel with grease fittings for lubrication. Hydraulic shock absorbers are to be installed for a smoother ride. The GVW of the front axle shall comfortably exceed the actual front axle weight.

Front Bumper

The front bumper shall be a one-piece bumper made from polished stainless steel. It shall be mounted directly to the front frame extensions for maximum strength and shall incorporate two (2) stiffening ribs. The bumper shall NOT extension shall not exceed 30" from the front of the cab. There will be an aluminum or Stainless Steel gravel shield to protect the components of the front bumper from gravel and road salt and sand.

Bumper Tray

The tray shall be constructed of aluminum or Stainless Steel shall be recessed into the front bumper extension. The tray shall be designed to hold a winch, hydraulic hose reel and extrication tools.

Lid, Bumper Tray

There shall be a diamond plate lid covering driver hose tray. The lid shall be approximately 5.25" high allowing for hydraulic reels, winch, and hydraulic tools in the hose tray. It shall include a chrome grab handle, rubber hood latch and gas shock.

Winch

A Warn Series 12, 12000 lb. electric reversible winch with 125` of 3/8" galvanized aircraft type cable and a replaceable clevis hook shall be mounted to the chassis frame extension centered at the front bumper area. The winch shall be controlled with a 30` remote control switch. A 4-way roller cable guide shall be provided through the front bumper.

The winch control receptacle shall be located in the gravel shield driver's side.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Hydraulic Hose Reel two (2) - Hannay

Two (2) Hannay hydraulic hose reels shall be provided. The reels shall include 100' of hydraulic extrication hose, type to be specified at pre-build. The reels shall be wired directly to a 12 volt battery system with a remote mounted push-button rewind switch. The reel shall be located driver side front bumper and officer side front bumper.

Lead/Supply Lines

Two (2) 30' lead/supply lines shall be provided for the hydraulic reels. Locate driver side front bumper and officer side front bumper.

To be used with 10,000 PSI hydraulic reels.

Front Tires

The front tires shall be of All Terrain (Mud and Snow) tread design, tubeless radial Goodyear brand tires. These tires shall be mounted on the aluminum wheels / rims. The tire capacity shall be matched to the front axle weight / GVW capacity. A tire pressure monitoring system shall be installed.

Front Wheels

The wheels / rims shall be of aluminum construction with a chrome hub cap and chrome nut covers that can be highly polished. They shall be installed on the front axle.

Laser Alignment

The chassis shall have a laser alignment performed at the factory before delivery.

Steering

The power steering system shall be utilized. The engine shall be equipped with a gear driven pump.

Rear Axle

The rear axle shall be Meritor brand. The rear axle shall have a capacity of no less than 31,000lbs.

Rear Axle Brakes

The rear brakes shall be of Drum Brake design and air operated for increased stopping power and brake life in severe braking applications

Rear Axle Suspension

The rear springs shall have a weight capacity to comfortably exceed the vehicle's rear axle actual weight. Hydraulic shock absorbers are to be installed for a smoother ride.

Rear Differential

The axle shall be serviceable and the initial lube shall be synthetic of a weight meeting the manufacturer's specifications.

Rear Tires

The rear tires shall be Goodyear brand of All Terrain (mud and snow) tread design tubeless radial. These tires shall be mounted on the aluminum wheels / rims. The inner dual wheel shall be aluminum with Teflon spacers between the inner and outer wheel. The tire capacity shall be matched to the rear axle weight / GVW capacity. A tire pressure monitoring system shall be installed.

Rear Wheels

The wheels / rims shall be of aluminum construction with a chrome hub cap and chrome nut covers that can be highly polished. They shall be installed on the rear axle inside and outside locations on both sides. Valve Stem extensions shall be installed so the tire pressure can be checked without going under the apparatus or removing a tire.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Stability Enhancement (Optional)

The apparatus shall be equipped with a G4 4S4M Electronic Stability Control (ESC) system that combines the functions of Roll Stability Control (RSC) with the added capability of yaw - or rotational – sensing.

RSC focuses on the vehicle's center of gravity and the lateral acceleration limit or rollover threshold. When critical lateral acceleration thresholds are exceeded, RSC intervenes to regulate the vehicle's deceleration functions. The added feature of ESC is to automatically intervene to reduce the risk of the vehicle rotating while in a curve or taking evasive action, prevents drift out through selective braking, and controlling and reducing vehicle speed when lateral acceleration limits are about to be exceeded.

Intervention by the system occurs in three forms - engine, retarder and brake control. The ESC system uses several sensors to monitor the vehicle. These include a steering wheel angle sensor, lateral accelerometer, and yaw position sensor. ESC constantly monitors driving conditions and intervenes if critical lateral acceleration is detected or if the vehicle begins to spin due to low friction surfaces. The system provides control of engine and retarder torque as well as automatically controlling individual wheels to counteract both over steer and under steer.

To further improve vehicle drive characteristics, the unit shall be fitted with Automatic Traction Control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve shall be added to the ABS system. The system shall control the engine and brakes to improve acceleration slip resistance. The system shall have a dash mounted light that shall come on when ATC is controlling drive wheel slip.

3 year/300,000 miles parts and labor warranties for ESC, RSC, and ATC shall be provided as standard by Meritor Automotive.

Optional Item – Bid as a separate add on price

Top Speed

NFPA 1901 shall be followed regarding top vehicle speed.

Warranty – Chassis

The frame and cross members shall carry a lifetime warranty and a 25 year corrosion warranty to the original purchaser.

Cab

Cab Dash

The center and officer side dash shall be constructed from smooth aluminum or stainless plate painted or coated to match the cab interior. A designated Laptop location on the dash for the Officer shall be supplied and a laptop mounting device capable of securely holding a laptop from the vibration and movement anticipated within the cab. In addition the mounting device should be able to slide to the Officer so the he or she can use the laptop while the vehicle is in motion.



The lower kick panels below the dash to be constructed from aluminum or stainless steel plate. The panels shall be removable to allow for servicing components that may be located behind the panels. Plastic, fabric, or vinyl coverings will not be accepted.

NO EXCEPTIONS

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Cab Design (known as a Custom Cab)

The cab shall be constructed from Aluminum or Stainless Steel, capable of seating up to four (4) firefighters and be of a one-piece tilting, contoured front, fully enclosed design. The crew cab shall have four (4) side doors and be cab over engine forward style. The cab shall have an "Open Space" design, free of interior walls or obstructions. Occupant safety is a primary concern and engineering measures shall be incorporated to ensure safety of the occupants verified by testing so commercial cab or Engine forward designs will not be accepted.

NO EXCEPTIONS

Cab Dimensions

The cab shall have the following overall dimensional requirements:

Overall Width 96" minimum

Roof Profile - The rear portion of the cab roof shall be raised. The front of roof shall be sloped from the vertical. Windows shall be provided on the sides only. A 16" raised roof shall be used. There should be at least 5'7" (67") standing room.

NO EXCEPTIONS

Cab Doors

There shall be reflective signs on each cab door in compliance with all NFPA requirements. Four (4) side-opening cab doors shall be provided. Doors shall be constructed of aluminum. The front doors shall open no less than 70 degrees, and the rear doors shall open no less than 75 degrees.

The doors shall be securely fastened to the doorframes with hinges, for long life and corrosion resistance. Mounting hardware shall be treated with corrosion-resistant material prior to installation. For effective sealing, an extruded rubber gasket shall be provided around the entire perimeter of all doors. The interior door skin shall be Aluminum or Stainless Steel and painted.

Stainless steel paddle-style door latches shall be provided on the interiors of the doors. The latches shall be designed and installed to protect against accidental or inadvertent opening as required by NFPA 1901.

All windows shall have automotive safety tint. Full roll-down windows shall be provided for the front cab doors with vented window in-front of the roll down window. Rear doors shall have roll down or sliding windows.

Cab Door Safety

Reflective Material Striping Material and a LED warning light surface mounted and activated when the door is opened shall be supplied on the rear interior cab doors. The LED light similar to a Whelen ION Wide Angle . The reflective material shall meet NFPA 1901.

Cab Handrails

Cab Door Handrails shall be mounded to the cab on the latch side of each door. The handrails shall be designed to allow for a positive grip with a gloved hand. The top of the handrail shall not exceed 6'. The handrail shall be designed so that it can also serve to hang turnout gear.



COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page on BID	NO
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Cab Instruments and Controls

The following is a list of minimum driver operated or monitored gauges and switches:

- Speedometer with odometer
- Electronic tachometer
- Engine Hour Meter
- Engine coolant temperature gauge
- Engine oil pressure gauge
- Transmission fluid temperature gauge
- Two air pressure gauges
- Voltmeter
- Fuel level gauge
- Diesel exhaust fluid (DEF) tank level gauge
- Master battery switch/ignition switch
- Starter switch/engine stop switch
- Heater and defroster controls with illumination
- Marker light/headlight control switch with dimmer switch on steering column
- Self-canceling turn signal control with indicators
- Windshield wiper switch with intermittent control and washer control
- Master warning light switch
- Air filter restriction indicator
- Pump shift control with green "pump in gear" and "o.k. to pump" indicator lights
- Parking brake controls with red indicator light on dash
- Automatic transmission shift console
- Electric horn button at center of steering wheel
- Cab ajar warning light

Camera Back-Up

There shall be a Safety Vision camera model number SV-625B-KIT provided. The camera shall be mounted up high at the rear of the vehicle to provide a wide angle rear view with audio. The camera shall be interlocked with the chassis transmission. When the apparatus is placed in reverse the camera shall automatically be activated and when the transmission is placed in any other gear the V-Mux screen shall return to the previously displayed screen.

Message Center

Controls and switches shall be identified as to their function by backlit wording adjacent to each switch, or indirect panel lighting adjacent to the controls. Visual and audible warning lights and buzzers shall be on critical gauges.

Cold Weather Cab Insulation

Cold Weather Cab Insulation shall be installed in the rear wall and the cab ceiling to provide a better sound and cold-heat barrier. The material shall be compliant with FMVSS-302.

Cab Steps (Optional)

A step below the cab door shall be provided. The step surface shall comply with NFPA and be provided with an aggressive skid-resistant surface. Four Steps shall be provided and shall be located at the driver's front door, officer's front door, driver's rear door, and the officer's rear door. Steps under front cab doors shall not interfere with approach angle.

Optional Item – Bid as a separate add on price

Cab Tilt System

The cab shall tilt for servicing. Tilting shall be done by an electrically operated hydraulic system with a manual hand pump back-up system. Cab tilt interlock shall prevent the cab from tilting unless the parking brake is activated. There shall be a cab back-up locking system to ensure accidental lowering of the cab cannot occur.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Cab Crashworthiness Requirement

The apparatus cab shall meet and/or exceed relevant NFPA 1901 load and impact tests required for compliance certification with the following:

Side Impact Dynamic Pre-Load per SAE J2422 (Section 5).

Testing shall meet and/or exceed defined test using 13,000 ft-lbs of force as a requirement. The cab shall be subject to a side impact representing the force seen in a roll-over. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space, doors shall remain closed and cab shall remain attached to frame.

Quasi-static Roof Strength (proof loads) per SAE J2422 (Section 6) / ECE R29, Annex 3, paragraph 5.

Testing shall meet and/or exceed defined test using 22,046 lbs of mass as a requirement. Testing shall be completed using platen(s) distributed uniformly over all bearing members of the cab roof structure. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space and doors shall remain closed.

Frontal Impact per SAE J2420.

Testing shall meet and/or exceed defined test using 32,549 ft-lbs of force as a requirement. The cab shall be subject to a frontal impact as defined by the standard. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space, doors shall remain closed and cab shall remain attached to frame.

The cab shall meet all requirements to the above cab crash worthiness. Documentation shall be provided with the bid.

NO EXCEPTIONS.

Compartment Open "Ajar" Light

A Red Flashing LED Light shall be installed in the cab to alert the driver and Officer of an "open" door. The light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied. A label shall be applied adjacent to the light 'DOOR OPEN'.

Engine Cover

The engine cover shall be constructed from aluminum or stainless steel plate and painted or coated with a durable material such as "Rhino Lining or Line-X". It shall blend in smoothly with the interior dash and flooring of the cab. The engine cover shall have an engine service access door. Sound and thermal Insulation shall be provided to reduce the transmission noise and heat from the engine. Plastic, fabric, or vinyl coverings will NOT be accepted.

Floor Covering

All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 1901.

Grab Handles

A black rubber grip handle shall be provided on the interior of each front door below the door window to ensure proper hand holds while entering and exiting the cab. An additional black rubber grip handle shall be provided on the left and right side windshield "A" post for additional handholds.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page on BID	NO
-------------------	----

HVAC

An overhead air-conditioner / heater system shall be supplied. The unit shall be mounted in the cab interior. The unit shall provide an adequate number of discharges for AC and heat air delivery. Discharges shall provide airflow to the following locations at a minimum; floor of officer and driver, dash of driver and officer, rear occupant area, and to the front windshield providing defogging and defrosting capabilities as necessary.

NO EXCEPTIONS

A three-speed blower switch shall control air speed.

Performance Data: (Unit only, no ducting or louvers)

AC BTU: >50,000

Heat BTU: >60,000

CFM: >1100

Interior Door Locks

Door locks are not required although if door locks are provided they shall all be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when they are closed.

Interior Ceiling and Trim

The cab front interior ceiling shall have a vinyl headliner to cover all wiring and tubing used for lights and antenna leads.

Interior Lighting

A LED dome light assembly with one (1) white lens and one (1) red lens shall be installed. The white light activates with appropriate cab door and light assembly mounted push-button switch, the red light activates with light assembly mounted push-button switch only. There shall be two (2) mounted in the front of the cab, one (1) in the driver and one (1) in the officer ceiling. There shall be three (3) mounted in the rear of the cab, one (1) in the center of the cab, one (1) in the driver side and one (1) in the officer side ceiling.

Mirrors

Bus type mirrors will be used with the mount on the "A" post. Mirrors shall be heated and remote controlled by the driver while seated in the driver's seat.

NO EXCEPTIONS

Concave mirror will be on the top. Visibility of the mirror from the driver's seat shall not be obstructed with the computer screen open and the use of a 2" mirror shall be used if necessary for adequate visibility depending on the manufacturer.

Multiplex Display

The MUX multiplex electrical system shall include a Vista IV color display.

The display shall have the following features:

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

The display shall be located officer's side engine cover, driver's side engine cover.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Multiplex Electrical System

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

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

The over-current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

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

The V-MUX multiplex electrical system shall include a text display. The display shall have the following features:

Rugged vacuum fluorescent technology

Two twenty character lines

Programmed to show door ajar status and diagnostic information

The display shall be located center of dash.

NO EXCEPTIONS

NFPA Required Testing of Electrical System

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

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

A. Documentation of the electrical system performance tests required above.

B. A written load analysis, including:

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

Paint - Exterior

The Cab and body shall be painted to meet the paint manufacturer's standards and guidelines. A 10 year paint warranty shall be provided by the apparatus builder. The apparatus shall be painted with a shade to be determined at the pre-construction meeting. Cab shall have black roof

NO EXCEPTIONS

Power Circuit 12vdc

A 30 amp battery charger with four (4)"hot" circuits shall be provided. Each circuit shall be protected with a 30 amp direct to battery circuit (Always Hot), and a ground circuit with the proper wire size to handle the current shall be provided. These circuits are provided for two-way radio and/or accessory wiring. The radio / accessory power circuit shall terminate in the center of the cab on top of the engine doghouse. Additional wiring for flashlight and radio chargers shall terminate at each (4 total) riding position.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Rear Cab Wall

The Rear Cab Wall shall be constructed from smooth aluminum or stainless steel plate coated to match the cab interior. The panel shall be used to mount tools and accessories and materials used should reflect the intended use. The panels shall be removable to allow for servicing components that may be located behind the panels. Plastic, fabric, or vinyl coverings will not be accepted.

Seating

Front Seating

Drivers Position – The seat shall have an air ride suspension, high back with locking fore and aft adjustments. A 3 point seat belt harness shall be supplied for the seat.

Officers Position – The seat shall be capable of stowing a MSA 45 minute SCBA within the back of the seat. A SCBA Secure-All locking bracket which is NFPA 1901 complainant shall be installed. A 3 point seat belt harness shall be supplied for the seat. The SCBA release shall be located between the legs and recessed into the seat.



NO EXCEPTIONS

Rear Seating

Two (2) Rear facing SCBA seats shall be installed over the wheel wells separated by at least 12" to improve shoulder room. The seat shall be capable of stowing a MSA 45 minute SCBA within the back of the seat. A SCBA Secure-All locking bracket which is NFPA 1901 complainant shall be installed. A 3 point seat belt harness shall be supplied for the seat. The SCBA release shall be located between the legs and recessed into the seat.



NO EXCEPTIONS

Rugged Duty Interior

The interior of the cab shall be designed for rugged or severe duty for long life and durability. This means the interior shall be aluminum or stainless steel materials uncoated or coated with a poly type coating. The interior covered surfaces shall be door panels, engine cover, rear wall, and dash.

NO EXCEPTIONS

Steering Wheel and Column

The vehicle shall use a multi-position tilt and telescopic padded steering column with an integral high beam / turn signal control switch and center horn button. The column shall have self canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column or switched on the dash.

Sun Visors

Two (2) bus style vinyl padded sun visors shall be supplied, one on each side of the windshield.

Windshield Wipers

Multi speed with intermittent control electric wipers shall be installed. These wipers blades shall provide adequate windshield coverage and have wet arm electric pump washers. A 64 oz. minimum windshield washer reservoir shall be furnished.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Wiring

All harnessing, wiring and connectors shall be manufactured to the following standards/guidelines.

NO EXCEPTIONS.

- NFPA 1901-Standard for Automotive Fire Apparatus
- SAE J1127 and J1127
- IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies. (Class 3 – High Performance Electronic Products)

All wiring shall be copper or copper alloys of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Insulated wire and cable 8 gauge and smaller shall be SXL, GXL, or TXL per SAE J1128. Conductors 6 gauge and larger shall be SXL or SGT per SAE J1127.

All wiring shall be color coded and imprinted with the circuits function. The imprinted characters shall repeat at a distance not greater than 3".

A coil of wire shall be provided behind electrical appliances to allow them to be pulled away from mounting area for inspection and service work.

Radio antenna shall be installed by the manufacturer on the cab and the coax shall terminate with extra coax in the center of the dash reachable by the driver and officer.

Vehicle Data Recorder / Seat Belt Warning System

Apparatus shall be equipped with a Vehicle Data Recorder / Seat Belt Warning System that will function per NFPA 1901. The VDR data shall be downloadable by USB cable to a computer using an operating system using supplied reporting software.

Wiring Connectors

All connectors shall be Deutsch series unless a different series of connector is needed to mate to a supplier's component. All connectors will be environmentally sealed.

NO EXCEPTIONS.

The connectors and terminals shall be assembled per the connector/terminal manufacturer's specification. Heat shrink style shall be utilized unless used within the confines of the cab. No butt connectors will be accepted

NO EXCEPTIONS.

Wiring Protection

The overall covering of the conductors shall be loom or braid. Wiring loom shall be flame retardant black nylon.

Power Train

Air Dryer

A chassis Air Dryer (Webco brand) to remove moisture from the system shall be installed.

Air Inlet

A 1/4" brass quick-release inlet with a male connector shall be provided. The inlet will allow a shoreline to be connected to the vehicle.

Air Lines

Air Line shall be color coded and protected from damage utilizing brass fittings.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Air System

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The system shall consist of three (3) reservoirs with an air capacity exceeding 5000 cubic inches. The air system shall consist of the following components:

2 air pressure gauges and a warning light and buzzer shall be installed on the driver's instrument panel. A spring actuated parking brake built into the rear axle brakes with a manual control and warning light the in cab. These shall automatically apply in case of air system failure. A mechanical means of releasing the brake shall be provided in the event of total loss of air pressure.

The brake system shall be equipped with a Bendix-Westinghouse SR-1 valve to provide automatic braking in the event there is low air pressure in the rear axle air supply reservoir.

Manual quick drains with a pull cable reachable without going under the body shall be provided.

Alternator

A Leece-Neville Alternator rated at no less than 300 amps shall be installed meeting NFPA standards.

Batteries

A Battery system consisting of multiple batteries mounted to the chassis. Remote positive and negative jumper studs shall be located in an easy to access location on the chassis. Batteries shall have a warranty of twelve (12) months that shall commence upon the date of delivery of the apparatus.

Battery Charger

An on-board, 40 amp or greater, battery charger to maintain the batteries shall be installed. The unit shall connect to the power source through a super auto-eject which will open the circuit before physically disconnecting from the power source. The "Auto-Eject" shall be located on the "A" post/front corner of the cab in front of the hinge of the driver's door between 32" and 60" off the floor.

Coolant

The coolant system shall contain a coolant and water mixture. A coolant recovery system shall be installed on the chassis.

Coolant Hoses

The entire chassis cooling system shall silicon hoses. All clamps to be stainless steel worm drive type clamps. All hoses shall be routed, secured, and loomed to prevent damage from abrasion.

Cummins After-treatment System

The chassis shall be equipped with a Cummins exhaust after treatment system in compliance with EPA 2010.

DEF Tank

A diesel exhaust fluid (DEF) tank with a five (5) gallon capacity shall be provided. A sender shall be provided in the DEF tank connected to a level gauge on the cab dash. The tank shall be located under the cab with a fill spout not located with the diesel fill to avoid confusion with the diesel fill, easy access, and service.

NO EXCEPTIONS

Engine

Cummins Diesel Engine "L" series with 450hp torque 1250 lb-ft @ 1400 shall be used.

NO EXCEPTIONS

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Fast Idle System

A fast idle system shall be provided and controlled by the cab-mounted switch. The system shall increase engine idle speed to a preset RPM for increased alternator output.

Fuel Tank

A fuel tank of no less than 50 gallons shall be provided. A fuel water separator shall be installed with a visual and audible alarm in the event water in the fuel is detected. The fuel tank sending unit is to be mounted to the fuel tank so that easy replacement is possible without removing body panels. The fuel fill shall be located behind the rear tire on the officer's side.

Fuel/Water Separator

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve.

Heater Line Shut Off Valves

The heater circuit shall have manually operated quarter turn shut off valves installed on both the supply and return lines to allow a complete shut off of coolant flow to the cab heaters in hot seasons of the year.

Jacobs Engine Brake

The apparatus shall utilize a Jacobs Engine Brake to assist with braking. A Hi/Lo/Off switch with selection of braking options shall be at the control of the driver.

NO EXCEPTIONS

Radiator

The radiator shall have no less than 1400 total square inches of cooling surface. A sight glass for inspection shall be provided for quick fluid assessment. Silicone hoses shall be used. A transmission cooler shall be used to ensure adequate cooling of the transmission. The cooling system utilizing a fan clutch shall be used and must be approved by Cummins.

Transmission

Allison 5 speed Transmission (Emergency Vehicle Service) EVS3000 shall be provided with a push button lighted shift module. The shift module shall have means to enter a diagnostic mode and display diagnostic data including oil life monitor, filter life monitor, transmission health monitor and fluid level. Transmission Temperature gauge with warning light and buzzer shall be installed on the dash. Synthetic transmission fluid shall be used.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

Gear ratios shall be chosen to support low end torque for faster acceleration due to mainly in town driving.

A 2nd gear pre-select feature to be used in conjunction with the auxiliary braking system.

Transmission Cooler

The cooling system shall include a liquid-to-liquid transmission cooler capable of cooling the heat generated from the transmission. When a transmission retarder is selected, the cooler shall have an increased capacity to handle the additional heat load.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Non Walk-In Rescue Body

Apparatus Body Material

The apparatus body shall be constructed entirely of aluminum and considered a 20' body.

Front Body Trim

The front head of the body shall be aluminum diamond plate.

Roof Configuration

The perimeter roof is sunk in from the top of truck to allow for a storage and walking area on top of the truck. Entrance is at the rear of the truck. There shall be a catwalk that runs between the two roof compartments. There will be a ladder or stairs to the catwalk. The catwalk width will be no less than 24" and have LED lighting along the walkway. Slip resistant embossed diamond plate will be used on all stepping surfaces.

Roof Compartments

The roof compartment shall have a lid constructed of Aluminum diamond plate with latches for each compartment. The compartments will be lighted with a rope light under the latch side of the compartment running the full length of the compartment and be approximately 19" deep. Each lid shall be attached to the door ajar light.

Tailboard

A tailboard not greater than 12" wide and running the full width of the body with 45 degree cuts on the ends shall be provided and bolted to the body.

Air Cascade Bottle Storage

The Cascade air bottle storage shall consist of four (4) DOT approved storage cylinders. Each cylinder shall be rated to 6000psi and contain no less than 509 CF of air at 6000psi with a 2.25 safety factor.

The bottles shall be secured in the horizontal position over the top of compartments L-1, L-2, R-1, and R-2 in a recessed area on the roof.

Compartments

Lower half of all side compartments shall be approximately 24" deep. The upper half of the compartments shall be "transverse" style except for L-4, R-4, and B-1.

NO EXCEPTIONS

All doors shall be ROM Roll-up doors and painted to match the body color.

All doors with have a switch to activate the compartment lighting when the door is opened and the compartment lighting shall consist of strip lighting inside the tracks of each door. All compartments shall be lighted. Each door shall be attached to the Door Ajar light in the cab.

NO EXCEPTIONS

Rear Full Height Compartment

B-1 Compartment; the rear compartment shall be a full height compartment with an approximate height of 72" and 60" deep.

R-1 Compartment

This compartment shall be transverse have one full depth roll out shelf and one full depth adjustable shelf. Full depth is to the back side of the fill station. 6-Unistruts (3 on each wall evenly spaced) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position for future growth. 1 (one) full depth pull out tray with at least a 500lb capacity rating and 1 (one) adjustable shelf.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

R-2 Compartment

This compartment shall be transverse have an extended floor with 2 (two) vertical roll-out tool boards. 4-Unistrut (2 on each wall) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position for future growth.

R-3 Compartment

This compartment shall be transverse and no shelving provided. 4-Unistrut (2 on each wall) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position for future growth.

R-4 Compartment

This compartment shall be approximately 2' deep and have 2 (two) adjustable shelves and 1(one) pull out tray mounted to the floor with at least a 500lb capacity rating. 4-Unistrut (2 on each wall) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position.

L-1 Compartment

This compartment shall be transverse and the main purpose of this compartment is to refill SCBA bottles so a 4 Bottle Air Cascade v System; DOT 6000 PSI will provide the air. All major components and accessories are to be clearly identified with permanently affixed nameplates stating the make, model, and serial number. Other important information such as capacities, voltages, currents, etc., is to be indicated in the proper manner.

Appropriate tags and warning labels shall be affixed where necessary for safety and ease in the operation and adjustment of valves, switches, and controls. An instruction manual shall be provided clearly explaining all aspects of the unit.

A one (1) year warranty shall be provided.

All components shall be rated to 6000psi with a 4:1 safety factor on all components shall be required and documentation of compliance shall be provided.

The control panel shall air controls for each (4) bank of air cylinders. Each individual bank shall have an individual gauge with a multi-turn control valve located on the control panel. On the panel will be a Back-Fill connection for quick-connect fitting for refilling of the cascade Storage Bottles. There shall be a 10,000 master gauge displaying the master pressure of the system. There shall be a 0-6000psi regulator for controlling the pressure into the fill station. The bottle fill pressure gauge shall have indication points for filling of 2216 psi and 4500 psi bottles.

A SpaceSaver 2-Bottle Fill Station shall be provided and installed according to NFPA guidelines.

SCBA STORAGE

- SCBA Vertical Storage
Two (2) SCBA storage tubes shall be stacked vertically.
- SCBA Horizontal Storage
Three (3) SCBA storage tubes shall be installed horizontally.
- Zico SCBA Storage Rack Large
The rack system holds six (6) SCBA cylinders. The unit shall be PVC coated and Black in color.

L-2 Compartment

This compartment shall be transverse and 1(one) pull out tray mounted to the floor with at least a 500lb capacity rating. A solid vertical divider mounted 24" from the front wall with 3 (three) adjustable shelves using unistrut mounting towards the front wall and 1(one) vertical pull-out tool board towards the rear.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

L-3 Compartment

This compartment shall be transverse. 4-Unistrut (2 on each wall) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position for future growth.

L-4 Compartment

This compartment shall be approximately 2' deep and have 2 (two) adjustable shelves and 1 (one) pull out tray mounted to the floor with at least a 500lb capacity rating. 4-Unistrut (2 on each wall) will be installed in this compartment extending 12" from the floor to 12" from the bottom of the roll-up when in the open position.

Air Connection

A female air chuck shall be provided on the air fill station panel to connect an air hose so that a air hose can be connected to blow off PPE or other equipment.

DOT Apparatus Lights

The apparatus shall have all DOT required lights using a Whelen model M6 series taillight assembly with chrome housing. All lights shall be LED where applicable. The LEDs shall include but not be limited to: Turn signals (with arrow), cab marker lights, body marker lights, brake lights, and backup lights. Headlights are not required to be LED.

Fender Skirts

Stainless Steel Fender Skirts shall be provided in the area of the Front and rear wheels to dress out the tires.

Front Tow Eyes

A set of Front tow eyes shall be mounted to allow towing (Not Lifting). The tow eyes shall be secured to the frame by welding or bolting but shall be secure enough so they do not separate from the frame during towing.

Mud Flaps

There shall be mud flaps on the front and rear tires to protect the body from damage.

Rear Tow Eyes

A set of Rear tow eyes shall be mounted below the body to allow towing (Not Lifting). The tow eyes shall be secured to the frame by welding or bolting but shall be secure enough so they do not separate from the frame during towing. The tow eyes shall be protected from corrosion by paint.

Reflective Striping

All body reflective striping per NFPA 1901 and previous Columbus Fire Department graphics.

SCBA Bottle and Fire Extinguisher Storage

The body well area shall be used to store extra SCBA bottles. No less than 6 SCBA bottles shall be stored.

Underbody Lighting

Underbody lighting shall be LED and shall comply with NFPA 1901 requirements.

Wheel Chocks

A set (pair) of Zico folding wheel chocks with brackets shall be provided

Lighting

Generator

The apparatus shall be equipped with an ONAN YD two (2) bearing direct drive power take off driven direct drive 25 KW Generator.

Rating and Capacity

Rating: 25,000 watt continuous duty rating: 100% of name plate rating

Volts: 120/240 (with voltage control of +3%)

Amps: 208/104

RPM: 1800

Cycles: 60 (with frequency control of + 1%)

Phase: Single

Data Plate: shall be installed on the generator instrument panel with the above electrical generator information, including engine speed and all information noted above on generator performance.

The generator shall be driven from the power-take-off from the automatic transmission. A "PTO control" shall be located at driver's position. Generator shall be equipped with a means to prevent the unintended movement of the control device from its set position. An interlock shall prevent PTO engagement unless the parking brake is engaged. An interlock shall be installed to prevent engine speed control from any other source while the generator is operating.

A green indicator light shall be located in the driving compartment. The light shall be energized when the PTO drive has been engaged and shall be marked "GENERATOR PTO ENGAGED."

A monitoring display shall be located in L-1 compartment to monitor voltage and amperage



output of the generator.

The Generator shall be subjected to 3rd Party Generator Testing. The generator shall be tested at the manufacturer's facility by an independent, third-party testing service. The conditions and testing of the generator shall be as outlined in current NFPA 1901. The results of the test shall be recorded and provided with delivery documentation.

Breaker Box

A twenty (20) place breaker box with up to twenty (20) full size ground-fault interrupter circuit breakers shall be supplied. The breaker box will include a master breaker sized according to the generator output. The breaker box will be located in the specified compartment, not to exceed 12' run of wire.

Location: L2 forward wall.

Light Tower

One (1) Will-Burt Night Scan Chief model NS2.3-920SPA/120VAC extendible LED lighting system shall be installed ahead of the raised roof and mounted side to side and hinged to driver side.

- The lighting system shall include four (4) 230 watt 120 volt FRC Spectra series SPA100-K20 LED light fixtures with an output of 20,000 lumens each.
- A hand held pistol grip remote control on a 25 ft. cord controls the aiming of lights. The up/down switch and Auto-Stow switch, which allows for quick and accurate pointing of lights and raising of light tower and automatically shuts off the lights when being stowed. The control shall be located next to the breaker box.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Electric Cord Reel

Hannay electric rewind cord reel (ECR 1616-17-18) shall be installed and located B1 ceiling mounted offset driver side. The reel shall include 200' of yellow 10 gauge 3 conductor type cord. The cord shall be rated at 20 amps @ 110 volts. The end of the cord shall be terminated for the installation of a 20 amp twist lock connector.

Stainless steel cord reel rollers shall be installed and located on the reel. Additional rollers shall be located on the rear of the body to protect the body from paint damage caused by the cord.

A Circle D PF51 power box with four (3) 20 amp 110 volt twist lock receptacles and one (1) residential receptacle shall be provided. The power box shall not be hard wired to the cord reel. The receptacles shall be enclosed in a UL listed, NEMA Type 3R cast aluminum box with an NFPA required indicator light.



Located on cord for reel in B1 ceiling mounted offset driver side.

A Circle D model #213 cast aluminum mounting box shall be installed as specified for the Circle D junction box. Mount located for box with reel in or on B1 ceiling mounted offset driver side.

A heavy duty rubber covered electric reel rewind button shall be installed on wall near cord reel.

Receptacle

A 20 amp, 110 volt 3-prong straight blade NEMA 5-20 duplex household receptacle with stainless steel cover plate shall be installed in a non-weather exposed area as specified by the department. The receptacle shall be wired to the inlet receptacle where it will have over current protection from an external source.

Location: L1 high on forward wall, R2 high on forward wall, L4 high on forward wall, R4 high on forward wall.

A 30 amp, 220 volt NEMA L6-30 twist lock receptacle with a weatherproof cover plate shall be installed as specified by the department.

Location: officer side upper forward roof top compartment offset forward.

Scene Lights –12 Volt LED

Fire Research Spectra LED scene light model SPA260-Q15 surface mount light shall be installed and includes switch in cab.

The lamp head shall have sixty (60) ultra-bright white LEDs, 56 for flood light and 4 to provide a spot light beam pattern. It shall operate at 12/24 volts DC, 15,000 lumens of light.

Location: Center of body (approximately) in upper body panels, officer side, Center of body (approximately) in upper body panels, driver side.

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

12V LED Flood Light - Brow

Fire Research Spectra model SPA802-Q20-02 contour roof mount light and includes switch in cab. The mounting brackets shall attach to the lamp head and attached to the roof radius.

The lamp head shall have eighty four (84) ultra-bright white LEDs. It shall operate at 12/24 volts DC, and generate 20,000 lumens of light. The lamp head and mounting arm shall be powder coated black.

Location: center of front cab brow.

WARNING LIGHT PACKAGE

All warning devices shall be mounted in compliance with NFPA standards. All warning lights in the same level shall be synchronized so that adjacent lights do not illuminate simultaneously.

Warning Light Bar

A Whelen Freedom IV Series 72" LED light bar model F4X7 with eight (8) LED modules shall be provided; two (2) front corner mounted red LED modules, two (2) outboard forward facing red LED modules, two (2) inboard forward facing white LED modules and two (2) side facing red LED modules) all with clear lenses.

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

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

One (1) pair of Whelen 1.5" tall (model MKEZ7) mounts shall be provided on the front light bar.

Lower Level Warning Light Package

Ten (10) Whelen LED red light M6R heads shall be provided. The rectangular lights shall include chrome flanges where applicable. The lights shall be wired with weatherproof connectors and shall be mounted as follows:

- Two (2) on the front of the apparatus facing forward as far from the headlights as possible but still on the front of the cab, 1 (one) each side.
- Two (2) on the rear of the apparatus facing rearward, 1 (one) each side.
- Two (2) lights each side of the apparatus, one (1) each side at the forward most point (as practical), and one (1) each side at the rearward most point (as practical).
- One (1) light each side of the apparatus centrally located in the rub rail to provide mid ship warning light.

Upper Level Warning Lights

Six (6) Whelen M-Series Super LED model M9RC red light heads with clear lens shall be provided.

The light heads shall be mounted as close to the corner points of the apparatus 20' Rescue body (as practical) as follows:

- One (1) light each side on the rear of the apparatus, (1) on driver side and (1) on officer side upper rear corners (as practical).
- One (1) light each corner on the sides of the body (as practical).

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Directional Traffic Warning Light

One (1) Whelen model TAM83 LED Traffic Advisor™ with amber lenses shall be provided. The light bar shall include Eight (8) TIR3™ Super-LED® lamps.

The directional bar shall include a TACTLD1 control head. The control head shall include a remote flash control and end lamp enable/disable feature.

The light shall be installed at rear of body to direct traffic around the apparatus.

The directional light bar control head shall be located in the center overhead console offset to officer side.

The rear directional light bar shall be activated in the (all light alternating flash mode) when the upper level warning lights are activated to provide additional warning lights, when the vehicle is responding or stationary at a scene.

Electronic Siren

A Whelen electronic siren shall be installed in the cab. The siren amplifier and control panel module shall include a rotary selector, on/off switch, push button switch for manual siren or air horn tones, and noise canceling microphone.

The electronic siren control shall be located in the center overhead.

Mechanical Siren

A chrome plated and pedestal mounted Federal Q2B-P coaster siren shall be installed on top of the front bumper extension.

An electric siren brake switch shall be located in the cab accessible to the driver.

The siren shall be located driver side front bumper.

Siren Speaker

One (1) 100 watt speaker with chrome grill shall be recessed in the front bumper.

The speaker shall be located officer side front bumper inboard of frame.

Air Horns and Switches

Air Horns shall be switched to the ignition switch so is prevented accidental operation when the ignition is off. Dual Air Horns shall be provided and mounted in the front bumper.

A three (3) position rocker switch shall be installed in the cab accessible to driver and properly labeled to enable the operator to activate the OEM traffic horn, air horn or Federal Signal Q2B siren from the steering wheel horn button.

A heavy duty pushbutton switch shall be installed on the instrument panel on the officer's side of the engine cover to operate the Air Horn. The Drivers horn ring shall also activate the air horn.

NO EXCEPTIONS

Alternating Headlights

The headlights shall have an alternating headlight feature. When the high beam is activated or the parking brake is activated the flashing headlights shall be deactivated.

NO EXCEPTIONS

COLUMBUS FIRE DEPARTMENT

BIDDER
COMPLIES

Page
on
BID

NO

Warning Switching

All warning lights shall be located on one (1) master emergency lights switch. Individual warning lights maybe switched but they shall be activated one location, the master warning switch. The alternating headlights shall be activated by the master warning switch. The directional arrow shall also be activated by the master emergency switch activating it in the flash mode. The master warning shall also energize the audible warning devices. A sequential switching system shall be employed to ensure that a sudden draw on the electrical system does not occur. All white warning lights shall be deactivated when the parking brake is activated per NFPA.

NO EXCEPTIONS

General

NFPA Compliance

The apparatus shall be compliant with NFPA 1901, 2009 edition.

NO EXCEPTIONS

Manuals

Two (2) complete manuals with "AS BUILT DRAWNINGS" shall be provided.

Training

Training for all firefighting shift personnel shall be provided by the manufacture. The 3 shifts will require 3 separate days of training including but not limited to vehicle orientation, generator operation, external scene lighting, and apparatus operations.

Training for the Fire Department Mechanic will be provided to ensure full understanding and shall include but not limited to regular periodic maintenance schedules and requirements, any proprietary systems installed, generator maintenance, multiplex operational and diagnostic software, and any other system or procedure necessary for efficient operation of the apparatus.

Warranties - Parts and Labor – **NO EXCEPTIONS**

Bumper to Bumper – Three (3) year and all work and labor provided by the bidder.

Cummins Engine – No Less Than - 5 years

Transmission – No Less Than - 5 years

Frame and Cross members – No Less Than - Lifetime

Cab Structure – No Less Than - 10 years

Body Structure - No Less Than - 10 years

Paint – No Less Than - 10 years not pro-rated

Stability Enhancement – 3 year/300,000 miles parts and labor warranties for ESC, RSC, and ATC shall be provided as standard by Meritor Automotive.