CITY OF COFFEYVILLE FIRE DEPARTMENT
Vehicle Exhaust Removal Systems

Notice to Bidders

The City of Coffeyville is accepting bids for Vehicle Exhaust Removal Systems at Fire Station 1, 701 S. Walnut Coffeyville Kansas 67337.

This bid will be a lump sum price and will include Labor, Material, and Installation.

Sealed bids will be due at the City Clerk’s office at 102 W. 7th Coffeyville Kansas by Tuesday June 12, 2012 at 10:00 am. The bids shall be directed to the City Clerk. (A bid sent by fax and/or e-mail will not be accepted)

Sealed bids shall be mailed to:

City of Coffeyville
P.O. Box 1629
Coffeyville Kansas 67337

In the lower left hand corner it shall read: Fire Department Exhaust System

Each bidder by submitting a bid represents they have read and clearly understand the bidding documents, plans and specifications.

The City of Coffeyville reserves the right to accept any proposal and/or bids, to reject any and /or all proposal and or bids in full or in part, and to waive irregularities and /or formalities as deemed appropriate.

The completion date for this project will be no later than October 31, 2012.
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BIDDER RESPONSIBILITY AND REQUIREMENTS

Bidder will have a minimum of five years experience in the coordination, management, and construction of commercial and/or industrial projects of this size or larger.

The selected bidder will be held responsible for Construction, and Complete Finish of this Project. This Project includes all the areas of work included in this bid document scope of work.

Successful Bidder will report directly to the Fire Chief.

The successful bidder will use skilled craftsman, latest techniques and prudent means to complete this project in a manner keeping with skilled workmanship, to satisfy the Owner.

Within 10 days of the award date the successful bidder will submit a work schedule to the Fire Chief for approval.

CITY OF COFFEYVILLE FIRE DEPARTMENT
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BIDDER INSURANCE REQUIREMENTS

As installation work will be taking place on City of Coffeyville property, Bidders must supply the City of Coffeyville with copies of certificate of insurance with the coverage requirements listed below at time of bid.

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<th>COVERAGE</th>
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CITY OF COFFEYVILE FIRE DEPARTMENT
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Scope of Work

1.1 Extraction System Overview

1.1.1 The exhaust system shall be designed to vent 100% of exhaust gases and particulate safely to the outside of the fire station. The exhaust system shall be designed and installed by factory-authorized personnel, which have been certified by the manufacturer of the exhaust system. Manufacturers shall be required to have a minimum of five years of proven manufacturing experience in the manufacture of emergency vehicle exhaust extraction equipment. This experience must include a vehicle (or) vehicles that have made 1200 emergency response calls a year for a minimum of 3 years. The purpose of this section of the specification insures that the vendor has a proven system for durability in high run departments.

1.1.2 This specified requirement allows the fire department to use the exhaust system for checking the vehicle pump and engine when it is inconvenient to do so outside the station house and without creating unnecessary performance criteria.

1.1.3 Station 1 is a 5 bay station that houses a 1985 Pierce Engine, a 2010 Ahrens Fox HME, a 1998 Sutphen Ladder and a 1997 Pierce Engine and a 2005 Duramax Diesel C4500.

1.2 Airflow requirements

1.2.1 Exhaust system shall be designed to eliminate vehicle exhaust gases by a continuance of negative pressure vacuum from vehicle tailpipe to the inlet of the fan. The system shall have virtually 100% capture capability of exhaust fumes. This includes that no exhaust fumes shall escape from the rear or any other portion of the direct connection of the exhaust system hose and the vehicle tailpipe connection.

1.2.2 This exhaust system shall extract hot exhaust gases by creating venturi suction vacuum around entire exhaust tailpipe to draw the exhaust gases and particulate into the connection nozzle by effectively inducing ambient air at the universal nozzle and tailpipe adapter connection.
1.2.3  The system shall be designed to vent toxic exhaust gases when the exhaust fan is not powered up at engine start-up due to power failure by means of ambient airflow tailpipe adapter that to seal off the backwash of toxic exhaust gases when vehicle is connected to the exhaust extraction system.

1.2.4  Substantially airtight exhaust extraction systems must employ ambient air induction to cool hot gases down to save the life of the flexible hose and exhaust fan motor bearings.

1.2.5  Exhaust system hose drops shall be sized to maintain a minimum cross sectional diameter of the vehicle tailpipe so that exhaust gases in combination with ambient air can be extracted in the exhaust system. Any Exhaust systems, which do not size hose drops to match the output CFM of the vehicle engine when running at 1500 RPM and maintain the vehicle’s tailpipe diameter, shall not be accepted.

1.3 Overall System Performance

1.3.1  System must be designed solely for high temperature vehicle exhaust removal for fire rescue apparatus applications including daily running of the apparatus to allow for pump testing and other operational test of the apparatus while inside the bay area of the station.

1.4 System Warranty

1.4.1  Complete exhaust system warranty shall be for a minimum of 5 years parts and labor. Exceptions are obvious misuse and/or abuse.

1.4.2  Any vendor claim of proven long-term durability must be illustrated on the specific product mentioned in this specification.

1.4.3  Any system offered to the City, that adds new or nonstandard system components not normally a part of the standard design used in all other emergency vehicle response application to date, shall not be accepted.

1.5 Turnkey Installation
1.5.1 Complete exhaust system including the exhaust fan, control box, ductwork, apparatus tailpipe modifications, all electrical connections and needs, and extraction unit shall be proven and field tested for a minimum of 5 years in the United States of America.

1.5.2 All system components shall be labeled with manufacturer identification.

1.5.3 Installation of Exhaust System shall be accomplished by a factory authorized installation team that specializes in the business of installing emergency response exhaust systems.

1.6 Air Testing

1.6.1 The overall design shall include individual systems for each apparatus that are specifically designed for the output CFM of the apparatus engine.

1.6.2 The design CFM for each vehicle unless otherwise specified shall be minimum 600 CFM.

1.6.3 The designed CFM stated has been selected to insure that exhaust system will not restrict airflow of exhaust gases as they are ducted to the outside of the station.

1.6.4 Air balancing shall be performed to insure that the designed CFM requirements are met for each bay.

1.7 Final Acceptance

1.7.1 At conclusion of installation of exhaust system all vehicles in the facility will be operated for a period of 15 minutes to insure that extraction hose, ducting, and fan have been sufficiently sized for all the vehicles operating in the fire station by providing negative pressure from the connection nozzle to the exhaust fan.

2.1 Method of Nozzle Attachment

2.1.1 The exhaust system shall attach to the vehicle within 3 feet of the door threshold by magnetic attachment.

2.1.2 The system shall be designed so that attachment to exhaust hose is accomplished by the operator standing erect and with one simple motion connect system to vehicle.

2.2 Method of Nozzle Release
2.2.1 The disconnection of the hose shall be *speed intolerant* by having the balancer lift the exhaust nozzle off the vehicle tailpipe. The actual disconnect shall be performed by a cable connected to the balancer and end of the drop hose at an elbow so not to put unnecessary strain or pull directly on the drop hose.

2.2.2 Any auto-release system that is speed sensitive to the driver requiring the driver to modify his or her speed, within reason, to control the nozzle release, *shall not be accepted*.

### 3.1 Extraction System Mounting Methodology

3.1.1 [Rail track/Flex trac system](#) must be supported a minimum of every 10ft. and no more than 5ft. of track shall be cantilevered from the end of the first and last support. A minimum of 2 supports shall be required for track systems that are 20ft. in length. Systems that are longer then 20 feet long must have at least 1 support every 10 feet.

2.2.3 The exhaust system shall be suspended from the building structure by means of aluminum vertical supports with galvanized strut attached to the building structure that is designed to eliminate side to side and front and back sway of exhaust system track or rail profile. The forces that are calculated must correspond with the release method of the exhaust system.

2.2.4 Overall look of suspension system must match the station quarters in a way that will benefit the appearance of the facility. All vendors must carefully examine the station house and publish their method of supporting the exhaust system which includes maneuvering around bay doors.

### 3.3 Sliding Aluminum Vacuum Suction Rail, Flex Trac

3.3.1 The exhaust system shall be equipped with a [lightweight rail](#), flex trac support system to convey the exhaust hose as necessary in each fire station.

3.3.1.1 Station 1 shall have five rails/flex trac with rubber seals which convey the exhaust hose from front bay-door threshold to midway of bay area.

3.3.1.2 This rail/flex trac must be designed for the specific use of fire station exhaust ventilation and be engineered to carry the specific weight of all exhaust system components attached to the track as well withstand the pull forces placed upon system when vehicle exits the station.
3.3.2 System shall have specific compartments for the sole use of splicing support rails together without using external splice plates for the simple reason that external splice plates do not look ascetically pleasing.

4.1 The System Balancer

4.1.1 The hose balancer shall be either locking or non-locking so that the connection of the exhaust system to the vehicle tailpipe is made simpler and easier for emergency personnel.

4.1.2 System balancer shall be calibrated and certified to carry the hose weight and have the capability to pull nozzle off the vehicle tailpipe with or without the assistance of a cable connected to the balancer and elbow near the nozzle.

5.1 Extraction System Exhaust Hose

5.1.1 The flexible exhaust hose is manufactured for the sole purpose of venting high temperature exhaust gases which are produced by internal combustion engines.

5.1.3 This construction of hose must be capable of operating at a continuous temperature of 400°F and intermittent temperatures of 500°F.

5.1.4 The exhaust hose diameter shall range in diameter from 3 - 7 inches depending on the size of the vehicle engine and corresponding exhaust pipe diameter.

5.1.5 Hoses shall be individually sized for each bay depending on the types of vehicles that are to be used in the bay that the exhaust system is installed. The exhaust hose shall not have any pieced together connections so as to avoid diesel exhaust leakage.

5.1.6 Any exhaust system that relies on static regain from the vehicle engine or uses the engine horsepower to push the hot exhaust gases into the exhaust system shall not be accepted. Any ventilation system design that allows for hose a diameter smaller than the vehicle tailpipe shall not be accepted.

6.1 Universal Nozzle
6.1.1 Engineered and specially designed exhaust system nozzle that is specifically designed to fit tightly over the circumference of a mating ring that attaches to the tail pipe and attaches tightly around the ring to capture 100% of the carcinogenic diesel exhaust fumes.

6.1.2 The nozzle shall be comprised of a transition elbow fabricated from galvanized steel or other material with debris screen.

6.1.3 Incorporated in the rubber boot are powerful rare earth magnets that allow the nozzle to attach to the tailpipe and also allows for a smooth release of the nozzle from the vehicle tailpipe.

6.1.4 This allows smooth positioning of the nozzle over the mating ring to produce a required substantially air tight seal, eliminating backwash of diesel exhaust fumes into the station.

6.1.5 The release of the nozzle shall be activated by a forward motion of an apparatus simultaneously causing a lifting and backward motion of the release nozzle. This action shall institute a simple mechanical release. The simple release shall be based solely on the upward pull of the system balancer, which causes the pole pieces to pivot on the tailpipe radius and release over the end of the tailpipe.

7.1 Tailpipe Adapter

7.1.1 Tailpipes that are connected to the system shall be retrofitted with a tailpipe adapter. The tailpipe adapter allows the nozzle to fit tightly against the outer edge of the magnetic mating ring on the tailpipe adapter.

7.1.2 The ring shall contain a series of machined holes placed around the circumference of the ring which allows cool ambient air to enter into the exhaust hose reducing the temperature of the diesel exhaust, and thereby extending the life of the exhaust hose.

7.1.3 The circumference of the magnetic nozzle/tailpipe adaptor mating ring shall allow ambient air to assist in cooling the exhaust temperatures inside the exhaust hose. Ambient air introduction will also protect the apparatus engine from backward spinning of its turbo engine when the fan is activated by another vehicle engine startup located in the adjacent bay and that apparatus is not operational.

8.1 System Exhaust Fan Overview

8.1.1 The interior exhaust fan shall be sized for a minimum of 600 CFM per extraction unit unless larger vehicles are being attached to exhaust system. The induction of ambient
air at the tailpipe connection shall insure that the exhaust temperature at the fan will less be then 150 degrees at the fan motor.

8.1.2 Each exhaust fan shall be designed specifically for the fire station with these factors being addressed:

1. The size and total number of vehicles being attached to exhaust fan.
2. The overall design of fire & emergency vehicle bays.
3. The location of the living quarters.
4. The existing electrical phase.

8.1.3 The sound decibels generated by the fan motor and impeller shall not exceed 81 Db at 5 feet.

8.1.4 Motors that allow exhaust temperatures in excess of 200 degrees shall not be accepted.

8.2 Fan Airflow Criteria

8.2.1 Shall be designed as a pre-engineered interior exhaust fan designed for the sole purpose of exhausting Volatile Organic Compound (VOC) and carcinogenic compounds generated by internal combustion engines designed to propel any motor vehicle.

8.2.2 The exhaust fan should operate automatically only during the point of when electrical power is administered to the totally enclosed fan motor.

8.2.3 Exhaust Fan shall be manufactured by a company who has produced such fans for a minimum of 5 years and shall come with a 1-year warranty from manufacturer.

8.2.4 Fan shall be capable of delivering a minimum of 600 CFM at 7” negative static pressure for 3”- 7” diameter hose drops for larger engines.

8.2.5 Fan will not be designed with static regain from vehicle engine to assist in meeting the performance criteria mentioned in next paragraph. At no point shall the diameter of the hose drop be less then diameter of vehicle tailpipe.

8.2.6 Station 1 fan should exhaust to the north side of the station.

8.3 Physical Fan Data

8.3.1 Fan housing shall be heavy gauge welded steel construction suitable for temperatures up to 250 degrees. Housings shall be provided with drilled inlet and discharge flanges. The discharge flange shall be “full flange” design.
8.3.2 The housing frame shall be constructed with four flat sides to allow for discharge change to vertical or horizontal positions with disassembly of unit.

8.3.3 Fan Impeller blower wheel shall be backward curved single thickness aluminum blade design.

8.3.4 Welds on fan housing shall be performed by a factory qualified personnel who have met the requirements of ASME Section IX.

8.3.5 The first resonant speed of each rotor shall be not less then 125 percent of normal operating.

8.3.6 Rotor shall be two plane dynamically balanced to a maximum final vibration level of 1.0 mil.

8.3.7 Fan motor shall be UL listed.

8.3.8 Fan motor base frame shall be constructed with four flat sides to allow for discharge to change from vertical or horizontal positions without disassembly of fan housing.

8.3.9 Motor bearings shall be heavy-duty anti-friction, self-aligning ball or roller bearings with positive shaft locking.

8.3.10 Fan Motor Vibration Isolation shall be manufactured as a complete assembly to assure the least possible vibration or movement. Fan wheel shall be both statically and dynamically balanced.

8.3.11 Fan motor labeling and identification must bear the same manufacturers name as the primary exhaust ventilation equipment and electrical controller operating it. Also listed on labeling shall be model number, RPM, pressure, inlet size, outlet size, temperature limitations, break horse power, CFM, class, and any warning labels or instructions required by Underwriters laboratories (UL).

9.1 System Ductwork

9.1.1 All galvanized ductwork shall be a minimum of 26-gauge pipe sizes for 4” – 5” in diameter, 24-gage pipe for sizes 6” – 8” in diameter, and 22-gauge pipe for sizes 9” – 14” in diameter.

9.1.2 Duct seals on the connection shall be with 400-degree silicone. Brazing and welding at joints are not required because duct system is designed for 7” of negative pressure and at these pressures the silicone sealant is sufficient to seal the system. The lateral fittings
shall be brazed or welded and must be designed with a minimum 45 degree branch taps for a smooth convergence of a two or more airstreams.

9.1.3 If duct system is designed for more than 7” static pressure than welding, brazing, and additional mechanical seals shall be required for the sole purpose that ductwork is used as an extension of the exhaust pipe and at times is placed under positive pressure.

10.1 Auto-Start Control System

10.1.1 Shall be designed to sense the output pressure which is normally generated by any internal combustion engine designed to operate any gas or diesel engine. The operating logic must be designed to complete this cycle. At any point in time, when the engineered nozzle is connected to the vehicle's exhaust tailpipe, and at which time the vehicle is manually or automatically energized by the operator, this automatic controller, sensing the engine's output pressure, energizes the exhaust fan electrical contractors, which are connected electrically to a low voltage timer that will keep the exhaust fan operating for a period of time designated by fire department procedures.

10.1.2 Controller Electrical controller must be UL listed/approved and manufactured in accordance with Underwriters Laboratories standard UL-508 enclosed industrial control panels and incorporate a limited energy control circuit.

10.1.3 Controller enclosure must be UL listed as type 12.

10.1.4 System control unit mounted electrical enclosure to restrict access of internal components of controller by only authorized entry.

10.1.5 Electrical contractors shall be industrial electrical contacts provided with the appropriate adjustable overload relays to meet the proper full load amperage of motor it is designed to control. Contactor must conform to the following standards: BS-5424, VDE0660, and approved by UL certification as an approved component.

10.1.6 Controller timer shall be solid state, 60-min variable timer. Operating logic must complete this cycle. Input voltage is applied to the timer at all times. Upon closure of a normally open isolated start switch, the load energizes and remains energized as long as the switch is closed. When the start switch opens, the timing cycle starts. At the end of the present time delay, the load de-energizes and the timer is ready for a new timing cycle. Timer must be UL recognized component.

10.1.7 System pressure sensor must be engine pressure sensing type capable of recognizing the output pressure of any type of motor vehicle. Electrical contact must be dry type and not exceed 24V.
10.1.8 Stop/Start Switch located on exterior of Controller shall be a red illuminated contact button. This device must meet UL type 4X rating.

10.1.9 Shall be provided and secured permanently to the exterior of electrical controller, indicating the manufacturer, their address and telephone number, user instruction and any warnings or cautions required by Underwriter Laboratories.

10.1.10 Controller Supplier will fully guarantee a minimum of five year warranty on parts and labor. Exceptions are obvious misuse and/or abuse to the system.

10.1.11 Shall incorporate Wireless low-voltage Sensor operation where required.
CITY OF COFFEYVILLE FIRE DEPARTMENT
Vehicle Exhaust Removal Systems

GENERAL STANDARDS

SAFETY:
Safety is of the utmost importance. All phases of construction shall be planned and executed to
be safe for all personnel. Adhere to all safety practices.

CODES AND STANDARDS:
All material, equipment and installation shall comply with the all applicable regulations,
ordinances, and codes of Federal, State, and City Governing bodies will apply. Of which are the
2006 International Building codes, and manufacture recommendations.

Should the drawings and/or specifications conflict with such codes and ordinances, the
conflicting portion of the work must meet the code and ordinance at no additional charge to
the City of Coffeyville.

INSPECTION AND COOPERATION:
The City of Coffeyville shall have the right to inspect the work whenever advisable in our
judgment. The successful bidder shall have a representative present at each inspection and
shall give such assistance as may be required.

The City of Coffeyville or our representative shall inspect all concealed work before being closed
in. The successful bidder shall call for such inspection prior to any actual concealment.

The successful bidder shall cooperate to the fullest extent with all other trades in order to best
expedite the progress of the work.

The successful bidder will read the specification and carefully examine any drawings so that
they are completely familiar with the project conditions, the work of other trades and the
responsibility to work with other trades during the course of construction.

GUARANTEE:
The successful bidder shall guarantee all material installed under this contract to be free from
defects for a period of five (5) years from date of final acceptance and shall repair or replace
any equipment or material which is defective or improperly installed at no cost to the City of
Coffeyville.
CERTIFICATES OF INSPECTION AND APPROVAL:

Upon completion of the work and before receiving final payment, the successful bidder shall furnish to the City of Coffeyville, copies of certificates of any and all inspections and approvals from all authorities having jurisdiction over any work.

OWNER INSTRUCTION:

The successful bidder will supply a complete bound set of manufacturer’s operating and maintenance instructions including completed warranty certificates with the date of final acceptance as the start of the warranty period.

PRODUCTS:

All equipment and material shall be new, like items shall be of the same manufacturer and shall be as specified and/or scheduled. All equipment and material shall be in accordance with these specifications.
CITY OF COFFEYVILLE FIRE DEPARTMENT
Vehicle Exhaust Removal Systems

SAMPLE BIDDER CONTRACT

This agreement entered into this______day of ____________, 2012 by and between the City of Coffeyville, (Owners), and _________________________, (Successful Bidder) for the following project: Vehicle Exhaust Removal Systems.

The Successful Bidder shall provide the following services and will have the following responsibilities for the construction of this project:

Responsible for overall Construction, Scheduling, and Complete Finish of this Project.

Certify the complete project meets the 2000 International Building codes and any or all other applicable regulations, ordinance, and codes of the Federal, State, and City Governing bodies. Of which, but are not limited to manufacture recommendation.

The Successful Bidder does hereby covenant and agrees that it will supply all necessary supplies, equipment, additional materials, apparatus and tools needed and necessary to complete the subject project according to said specifications.

The Successful Bidder further agrees that it will accept as full and complete compensation for the furnishing of equipment, and additional materials and tools for this project an amount equal to the figure of ____________. The purpose and intent of this provision being the total cost of this project will not exceed the proposal price of ____________.

The Owner shall make payment to the Successful Bidder, within 30 days upon Owner approval of submitted application for payment by the Successful Bidder.

The following attachments are made part of this agreement.
Bid Documents

City of Coffeyville

By________________________   By _________________________
   Mayor                        Successful Bidder
CITY OF COFFEYVILLE FIRE DEPARTMENT
Vehicle Exhaust Removal Systems

BID FORMAT

Vendors Name: _________________________________.

Address: _________________________________.

Telephone Number: _________________________________.

Fax Number: _________________________________.

Signature: _________________________________.

Date: _____ / _____ / ____.

Bid:
Lump Sum Total $___________________________.