MIAMI TOWNSHIP STATION VEHICLE EXHAUST SYSTEM BID
TECHNICAL SPECIFICATIONS

GENERAL SYSTEM DESCRIPTION

The exhaust extraction system shall be a direct source capture system designed to handle exhaust fumes from diesel and/or gas engines. The system shall be designed with a total of **six** (**6)** vehicle capture points.

COMPLIES? **___ Yes ___ No**

The exhaust extraction system vehicle connection shall be 100% compatible with the current system Miami Township uses. No additional modifications shall need to be made to current vehicles in the fleet.

COMPLIES? **___ Yes ___ No**

The exhaust extraction system parts and components shall be interchangeable with the current system Miami Township uses to enable parts from one station to be used at another in the event that an emergency repair is needed.

COMPLIES? **___ Yes ___ No**

The air filtration system to be installed shall be capable or removing diesel fume particulate with efficiencies of 97% to 99%. Pressure sensors will control the system operation. Utilization of an air filtration system shall add no more than 1" of static pressure to the system. Air filtration shall be capable of indoor or outdoor installation and have a removable access filter door. Air filtration shall be equipped with a flat louver outlet grille that can be rotated in four directions of discharge.

COMPLIES? **___ Yes ___ No**

MANUFACTURER QUALIFICATIONS

Bids shall only be accepted by bidders supplying equipment from manufacturers that have an established reputation in the business of manufacturing Automatic Emergency Response Vehicle Exhaust Removal Systems for a minimum of no less than fifteen (15) years.

COMPLIES? **___ Yes ___ No**

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To ensure quality, consistency, and reliability of products, the manufacturer must be ISO 9001:2008 Certified in the United States (www.iso.org), be UL and CUL Certified (www.ul.com/database/), and be certified by the Air Movement and Control Association (AMCA) (www.amca.org/search.htm). Certification documents shall be provided and attached to the bid proposal. **No exceptions.**

COMPLIES? **___ Yes ___ No**

All items in the system shall be the product of one (1) manufacturer. The product offering must be a product that has been offered by that manufacturer for a minimum period of fifteen (20) years. No prototypes or private label products by other manufacturers will be allowed.

COMPLIES? **___ Yes ___ No**

System bid shall have a life of service of no less than ten (10) years to establish proof of quality, longevity, and service. **No exceptions**. Equipment life of service shall meet the department's expectations for similar types of equipment.

COMPLIES? **___ Yes ___ No**

SYSTEM LAYOUT DRAWINGS

Bidders must complete an on-site survey of the facilities and provide layout drawings showing the location of equipment to be supplied and proposed location of vehicles to be serviced by the system. This is a mandatory requirement to ensure the proposed system meets the intent of the specifications and fits within the building space. Drawing must be included with the bid.

COMPLIES? **___ Yes ___ No**

PERFORMANCE CRITERIA

The exhaust removal system shall provide virtually 100% complete evacuation of all vehicle emissions (particulate, gasses, and fumes) at the source from start up to exit of the apparatus from the fire station.

COMPLIES? **___ Yes ___ No**

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The diesel exhaust removal system shall be capable of delivering complete coverage for bays up to 110 feet in length. The system must be able to accommodate drive through and back-in bays to meet all the needs of the fire department.

COMPLIES? **___ Yes ___ No**

The exhaust system shall not block doorways, exits, and aisles in the apparatus bay which could endanger the welfare of fire personnel or visitors.

COMPLIES? **___ Yes ___ No**

COMPONENT MANUFACTURING AND STANDARD PRODUCTS

Except for generally available hardware (e.g., bolts, nuts, screws), the main components of the system must be manufactured and provided by the manufacturer of the primary exhaust removal system (Equipment Manufacturer) and be a standard product of a manufacturer currently engaged in the manufacture of Vehicle Exhaust Extraction Systems. All items shall be the standard product of the manufacturer.

COMPLIES? **___ Yes ___ No**

QUALITY ASSURANCE

All workmanship, manufacturing procedures, airflow design and materials shall be performance guaranteed. If any findings or test studies reveal improper materials, defective components, or inadequate performance as outlined in the section titled "**REQUIREMENTS OF THE EXHAUST EXTRACTION SYSTEM"**, the bidder shall remove and replace at their expense the materials in question

COMPLIES? **___ Yes ___ No**

REQUIREMENTS OF THE EXHAUST EXTRACTION SYSTEM

A. Upon emergency vehicle{s) starting, the exhaust ventilation fan shall be automatically energized by the output pressure generated by any internal combustion engine and evacuate the toxic exhaust fume.

COMPLIES? **___ Yes ___ No**

B. Systems which unduly limit the exiting speed of vehicles connected to the system are not preferred as they can limit emergency response time.

COMPLIES? **___ Yes ___ No**

C. Due to the harmful effects of diesel exhaust, the system must be designed and capable of capturing virtually 100% of the exhaust gases and particulate even in the event of a complete power failure.

COMPLIES? **___ Yes ___ No**

D. The system shall not detach itself from the apparatus for any reason during a power failure other than normal exiting of a vehicle from the apparatus bay.

COMPLIES? **___ Yes ___ No**

E. Systems that require additional or alternate power sources to eliminate detaching of system vehicle connections during power failure are not acceptable due to additional maintenance requirements.

COMPLIES? **___ Yes ___ No**

F. To protect the apparatus electrical system from any possible damage, the system shall not incorporate any type of electromagnetic device that requires the apparatus to be utilized as an electrical ground for the system's operation.

COMPLIES? **___ Yes ___ No**

G. The system shall not incorporate any electromagnetic or magnetic devices that require either fastening or drilling into the side body panels or tailpipes of the fire apparatus which could affect vehicle warranty.

COMPLIES? **___ Yes ___ No**

H. The nozzle and adapter shall be of such design that a metal-to-metal seal is created when the vehicle is connected to the system. No gasket, silicone, or synthetic material shall be incorporated into the nozzle design.

COMPLIES? **___ Yes ___ No**

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I. The system design must allow that the manual connection of the nozzle to the tailpipe be done from a standing position. Designs requiring a user to bend over to connect nozzle, or that use a guide clip or pin-in nozzle, are not acceptable due to ergonomic reasons and to increased exposure of personnel to toxic diesel exhaust fumes which NIOSH lists as a hazardous material.

COMPLIES? **___ Yes ___ No**

J. The nozzle release mechanism shall be external on the system to insure safe disconnect of nozzle from the vehicle tailpipe. Systems that use an internal cable for this feature are not acceptable due to bidder's safety concerns. All adjustments needed must be capable of being performed outside the hose. No internal adjustments will be allowed.

COMPLIES? **___ Yes ___ No**

K. The entire hose assembly must be rated for 400°F continuous temperature exposure and 700° F intermittent temperature exposure to ensure the exhaust fumes do not deteriorate the hose and leak.

COMPLIES? **___ Yes ___ No**

L. The exhaust hose must incorporate a safety disconnect handle that completely separates the lower nozzle section from the upper hose assembly. The release tension of this disconnect should be adjustable to no less than 80 pounds of force, and up to a maximum of 206 pounds of force, to eliminate premature disconnect and to prevent excessive mechanical tension and strain on the track and mounting supports in the unlikely event the exhaust nozzle becomes entangled in the wheels or the undercarriage of the vehicle. The safety disconnect coupling must be reusable. External or internal release cables or other devices which may catch or snag on firefighters' gear are not acceptable.

COMPLIES? **___ Yes ___ No**

M. The system electrical control panel must be UL listed and manufactured in accordance with Underwriters Laboratories standard UL-508. The panel must be listed by Underwriters Laboratories and bear the UL label. The manufacturer of electrical controller must be the same as the manufacturer of the complete vehicle exhaust extraction system.

COMPLIES? **___ Yes ___ No**

N. A copy of the Underwriters Laboratories Authorization Page for the electrical control panel must be included with the bid.

COMPLIES? **___ Yes ___ No**

O. The manufacturer of the vehicle exhaust extraction system must manufacture all fans utilized as part of the system within its own facility.

COMPLIES? **___ Yes ___ No**

P. The upper and lower hose sections of the system must be capable of swiveling 360 degrees and allow for free-flowing system operation.

COMPLIES? **___ Yes ___ No**

Q. The system shall utilize adaptors which mate with a magnetic-type nozzle connection in order to secure the nozzle to the vehicle exhaust pipe. The fastening mode shall be a metal-to-metal connection.

COMPLIES? **___ Yes ___ No**

R. Systems which require disconnection of the nozzle from the vehicle when working on the vehicle's fuel system, when recharging batteries, or whenever there is a risk of flammable dust or explosive gases, are not acceptable.

COMPLIES? **___ Yes ___ No**

S. To ensure safe and effective fastening and disconnections of the system at a vehicle's tailpipe, the system shall utilize a magnetic attachment that allows the system to be attached from a standing position. The system shall be designed in such a way that attachment can be made from any direction of the nozzle and that no attachment point alignment is required.

COMPLIES? **___ Yes ___ No**

T. Due to safety of fire personnel, systems which require tailpipes or their adapters to protrude beyond the outside edge of chassis are not acceptable (as referenced in NFPA 1901).

COMPLIES? **___ Yes ___ No**

U. Overhead support track must be a minimum of 19-feet long and be one-piece extruded aluminum with a channel to accept the ball bearing rollers of the traveling trolley on the bottom side. Rubber impact end-stops shall be mounted on each end of the track.

COMPLIES? **___ Yes ___ No**

V. The traveling trolley shall be a galvanized steel assembly with four upper ball bearing wheels which fit inside the track profile of the support track, and shall incorporate a minimum of two lower ball bearing wheels to fit on outside of the track profile to prevent rocking or shifting of the trolley as it moves along the full length of the track.

COMPLIES? **___ Yes ___ No**

W. The transition from the magnetic nozzle to the flexible hose shall be a one-piece welded const ruction to prevent leaks of exhaust fumes.

COMPLIES? **___ Yes ___ No**

X. There shall be a metal debris screen in the system to prevent foreign material from being drawn into the system and damaging the flexible hose or exhaust blower.

COMPLIES? **___ Yes ___ No**

Y. The spring balancer which supports hose assembly shall be self-adjusting, be of an enclosed type, incorporate a stainless-steel cable, and support the hose assembly at the proper height during travel along the track. Systems that incorporate locking type balancers are not acceptable.

COMPLIES? **___ Yes ___ No**

Z. Systems that utilize any internal cable to pull at the vehicle tailpipe for system disconnect are not acceptable.

COMPLIES? **___ Yes ___ No**

AA. The spring balancer shall also support and maintain the hose at an acceptable height when a vehicle is in a parked position.

COMPLIES? **___ Yes ___ No**

BB. Due to high tailpipe temperature exposure, the nozzle construction shall be all metal without the use of a rubber connection to attach the hose to a vehicle's tailpipe or adapter.

COMPLIES? **___ Yes ___ No**

CC. The magnets located on the nozzle shall be positioned outside the exhaust airstream to allow for easy adjustment or changing.

COMPLIES? **___ Yes ___ No**

DD. The hose saddle shall be made of 26-gauge steel with a welded elbow utilized to support the hose between the upper and middle hose assemblies.

COMPLIES? **___ Yes ___ No**

EE. The system shall be designed to permit in-station pump testing for up to 15 minutes at 1500 RPMs. This feature must be noted on the System Operations Control Center procedures.

COMPLIES? **___ Yes ___ No**

FF. Tailpipe adapters shall be of a type that can be bolted onto, rather than welded onto, the vehicle exhaust system.

COMPLIES? **___ Yes ___ No**

GG. The electrical control panel shall be in a NEMA 12 rated key lock electrical enclosure. It will include: a solid-state circuit card with timer adjustments from 7 to 360 seconds, the motor starter, overload protection, and a fused low voltage transformer.

COMPLIES? **___ Yes ___ No**

HH. The control panel shall feature system indicator LED lights on the soft touch membrane controls.

COMPLIES? **___ Yes ___ No**

II. Due to the possibility of additional after-market devices causing interference with original equipment and causing a delay in response times, controls that require electrical or pneumatic devices to be installed on the vehicle to activate the exhaust blower are not acceptable.

COMPLIES? **___ Yes ___ No**

JJ. The control panel shall not utilize or produce electrical frequency transmission that may interfere with communications equipment.

COMPLIES? **___ Yes ___ No**

KK. The electrical control box shall incorporate a label on the front that covers the entire exterior door and which provides clear notation of the function of each soft touch membrane control. The controls shall be marked with the following functions:

AUTO START: This LED shall show the system is in full automatic mode of operation and that electrical power is supplied to the control panel.

FAN ON: This LED shall show that electrical power is supplied to the exhaust blower.

STOP: This LED shall show the exhaust blower is manually shut down. After three seconds this will return to AUTO START ready mode to prevent the exhaust blower from inadvertently being shut down.

MANUAL RUN: This LED shall show the exhaust blower is operating in a continuous mode until interrupted by the STOP control being activated.

NO AIRFLOW ALARM: This shall monitor the exhaust blower and advise when the exhaust blower is not operating properly

COMPLIES? **___ Yes ___ No**

LL. The control center box shall include an LED *Filter Status Indicator*. The indicator shall flash when filters are dirty and need changing to ensure optimum efficiency of the system.

COMPLIES? ___ **Yes** ___ **No**

MM. The system blower shall provide minimum conveying velocities of 3500 to 4000 FPM and capture velocities of 5500 to 6000 FPM without usage of ambient air as required by the Uniform Mechanical Code.

COMPLIES? ___ **Yes** ___ **No**

NN. Blower construction shall be class B, spark resistant with a powder coated steel housing, and feature aluminum wheels with shaft seals. System shall be tested in accordance with AMCA Standard 210.

COMPLIES? ___ **Yes** ___ **No**

OO. The exhaust fan / blower assembly shall be manufactured and supplied by the same manufacturer as the vehicle exhaust extraction system's manufacturer and have prior AMCA certification.

COMPLIES? ___ **Yes** ___ **No**

PP. The gauge of the ductwork shall be a minimum of 20- to 22-gauge galvanized sheet metal, round spiral, as outlined in the International Mechanical Code.

COMPLIES? ___ **Yes** ___ **No**

QQ. All non-welded ductwork, fittings, and joints shall be securely fastened and sealed with a mechanical Teflon duct collar with a locking bolt mechanism as required by the International Mechanical Code and the Uniform Mechanical Code.

COMPLIES? ___ **Yes** ___ **No**

RR. The system shall include a back-draft damper exhaust rain cap to provide protection from rain and other inclement weather as well as nesting animals or birds.

COMPLIES? ___ **Yes** ___ **No**

SS. A silencer / muffler shall be connected to the exhaust discharge to reduce discharge air noise for any fan 3HP or larger.

COMPLIES? **___ Yes ___ No**

WARRANTY

The system shall carry a warranty of not less than 5 years covering full parts and labor. A warranty certificate describing the warranty must be provided with the bid.

COMPLIES? **___ Yes ___ No**

During the warranty period, an annual inspection of the system shall be performed by a certified vehicle exhaust system installer or certified technician.

COMPLIES? **___ Yes ___ No**

Bidder shall offer an option to purchase an extended maintenance warranty to include annual inspections at the end of the initial warranty period.

Number of Months	Price
	$
	$
	$

COMPLIES? **___ Yes ___ No**

SYSTEM OPERATION TRAINING

At the time of installation, successful bidder shall provide training to appropriate Miami Township staff regarding the proper use, operation, and maintenance of the vehicle exhaust extraction system.

COMPLIES? **___ Yes ___ No**

COMPLETION OF INSTALLATION

Upon completion of installation, a thorough cleaning of any construction related debris and/or waste shall be completed.

COMPLIES? **___ Yes ___ No**

* * * END OF TECHNICAL SPECIFICATIONS * * *