

# Mauldin Fire Department

## Vehicle Exhaust Evacuation System Specifications

1.0 GENERAL INFORMATION	YES	NO
<p>Each Vendor must indicate his compliance with these specifications by writing their initials under "YES" or "NO" in the appropriate column for each paragraph of this specification. Indicating "<b>YES</b>" to a paragraph will mean <u>full compliance</u>; indicating "<b>NO</b>" will mean an exception is being taken. All exceptions must be fully explained on a separate page, titled "Exceptions", giving reference to the page and paragraph where the exception is being taken. It shall be understood that indicating "<b>YES</b>" with the knowledge that you <b>do not</b> comply with the specification, will be considered fraudulent and subject to legal action.</p> <p>It is the intent of these specifications to secure an automated vehicle exhaust evacuation system designed and installed in compliance with national, local, standards and codes. This system shall be installed into the existing fire station for the Mauldin Fire Department.</p> <p style="text-align: center;"><b>NO EXCEPTIONS</b></p>		
<p><b>2.0 VENDOR QUALIFICATIONS</b></p> <p>To be considered for a contract award a Vendor's company shall meet these minimum qualifications:</p> <ol style="list-style-type: none"> <li>1. Ten years experience in sales, installation and service of EMS/Fire Department Emergency Vehicle Exhaust Evacuation Systems of the size and scope requested by the Fire Department in this RFQ.</li> <li>2. Contractor must be a factory authorized installation certified distributors of the manufacturer with prior fire station vehicle exhaust evacuation system installation experience. RFQ's will only be accepted from certified representatives. No RFQ's will be accepted directly from System Manufacturers. <i>A certificate to this affect must accompany this RFQ.</i></li> <li>3. If the manufacturer of the vehicle exhaust evacuation system is ISO 9001:2000 UL and AMCA Certified. <i>Certificates to this affect must accompany the RFQ</i> any documentation associated with this process should be included with contractor's documents.</li> <li>4. Contractor must be registered and/or Incorporated to do business in South Carolina, prior to submitting RFQ. <i>A certificate to this affect must accompany the RFQ.</i></li> <li>5. More than one RFQ for the same work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Vendor has an interest in more than one RFQ for the Work may be cause for disqualification of that Vendor and the rejection of all RFQ's in which that Vendor has an interest.</li> </ol>	YES	NO

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<b>3.0 SCOPE OF WORK SYSTEM OPERATION</b>	<b>YES</b>	<b>NO</b>
<p>In the Fire Stations, the vehicle exhaust removal system shall capture the exhaust emissions directly at the tailpipe of the vehicle and exhaust those emissions to a specified area safely outside the building. The operating controller shall be designed to complete this cycle. For all undercarriage tailpipes, the system installed shall be a sliding balancer track system or a straight rail system. For all vertical stack tailpipes, the system shall be a Vertical Stack Rail system. For all undercarriage, a magnetic collection nozzle shall be connected only to the motor vehicle's exhaust tailpipe. With the Vertical Stack Rail, a tapered vertical stack nozzle shall be connected directly to the vehicle's exhaust tailpipe in a vertical orientation and shall stay connected to the vehicle's tailpipe. This tapered vertical stack adapter transitions any vertical stack of any fire or emergency apparatus from a round pipe diameter to a tapered cone fitting capable of easily entering the exhaust suction rail. When the vehicle returns to the station, the rail shall be positioned so the stack adapter will line up with a catcher pickup connection which will automatically align the rail with the vertical stack adapter allowing the operator to simply drive forward or back-in. The vertical stack adapter is designed to glide along inside the suction rail and in turn part rubber sealing lips located at the bottom of the rail profile with minimal friction and allow suction only at the point where the adapter is positioned. The vacuum pressure created by the fan seals the rubber lips. The rail shall be capable of moving side to side but not forward to back by means of a floating track design. After the system releases from the vehicle's tailpipe at the door, the rail shall retract passively and smoothly into the original position for re-entry of the vehicle. The floating track shall be fitted with secondary safety wires in accordance with safety standards. When the driver starts either the undercarriage exhaust fire apparatus, or vertical stack exhaust fire apparatus, the exhaust fan shall automatically energize and exhaust the toxic gases directly to the outside of the building. This automatic feature shall activate when the vehicles ignition is turned on. This automatic feature shall be achieved by means of a pressure sensor located at each hose drop; this pressure sensor shall sense the engines output pressure upon the first stroke of the engine piston and energize the fan starter. The automatic controller shall use an adjustable timer to keep the contactors energized for a designated period of time. The magnetic connection device shall stay connected to the vehicle tailpipe as it travels to the exit door by means of a pre-engineered sliding balancer track and straight rail system for single vehicle back-in and drive-thru applications. As the vehicle nears the exit door, the magnetic nozzle connection located at the tailpipe shall release the nozzle from the tailpipe. After the system releases the vehicle tailpipe at the door, it shall retract passively and smoothly into a convenient storage position. The straight rail systems used in drive-thru applications only, shall be designed with an auto crab return system. The auto crab return system shall return the hose drop from the front exiting door to the rear entrance door automatically via an electric return mechanism. When the vehicle returns to the station, the personal during hook up of the exhaust system will manually pull the flexible hose assembly to the entrance door. The personal operating the system without having to bend down and enter their breathing zone into the exhaust gas tailpipe zone shall attach the magnetic connection device without any force or alignment required to make the connection. The vehicle then proceeds to its designated parking position. Bending over or requiring force for connecting the nozzle to tailpipe is not acceptable due to increase of personnel's exposure time to toxic diesel exhaust fumes, At all times the personal operating the system making the connection must have his or her Breathing zone no closer than 3 feet or 1 meter from the tailpipe discharge and the exhaust air must be extracting at the nozzle. This requirement is based on new data from</p>		

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findings that Diesel Exhaust is a known Cancer agent. This is a mandatory requirement.		
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<p><b>3.0 SCOPE OF WORK</b> The Vendor shall provide and install an emergency vehicle exhaust evacuation system at the following Fire Station(s):</p> <p><b>Headquarters Fire Station 9 East Butler Road, Mauldin, SC 29662</b> - provide four (4) source capture systems, four (4) tailpipe modifications, one (1) motor blower, and one (1) UL listed control panel.</p> <p><b>Station #1 Substation 802 Miller Road, Greenville, SC 29607</b> - provide two (2) source capture systems, two (2) tailpipe modifications, one (1) motor blower, and one (1) UL listed control panel.</p> <p><b>Station #2 300 Rocky Creek Road, Greenville, SC 29614</b> - provide four (4) source capture systems, four (4) tailpipe modifications, one (1) motor blower, and one (1) UL listed control panel.</p> <p><b>Station #3 1821 Bethel Road</b> – Provide three (3) source capture systems, three (3) tailpipe modifications, one (1) motor blower and one (1) UL listed control panel.</p>	<b>YES</b>	<b>NO</b>
<p><b>3.1</b> All workmanship and materials shall be in accordance with applicable building and electrical codes, regulations and guidelines. The following codes, regulations and guidelines are to be considered part of these specifications and are a minimum standard of evaluation for this Exhaust System</p> <ul style="list-style-type: none"> <li>• NIOSH</li> <li>• Underwriters Laboratory (UL)</li> <li>• National Fire Protection Agency (NFPA)             <ol style="list-style-type: none"> <li>1. National Electric Code (NEC)</li> <li>2. NFPA 1500 – 2002 Edition</li> </ol> </li> <li>• Air Movement and Control Association International, Inc. (AMCA)</li> <li>• International Mechanical Code (IMC)</li> <li>• Uniform Mechanical Code (UMC)</li> <li>• American National Standards Institute (ANSI)</li> <li>• American Society of Mechanical Engineers (ASME)</li> </ul>	<b>YES</b>	<b>NO</b>
<p><b>3.2</b> The Contractor shall provide and install one (1) vehicle exhaust control panel listed by UL in accordance with underwriters laboratories standard UL-508, per fire station.</p>	<b>YES</b>	<b>NO</b>
<p><b>3.3</b> The Contractor shall provide and install one (1) Class B non-sparking direct drive exhaust blower per FIRE station.</p>	<b>YES</b>	<b>NO</b>

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<p><b>3.4</b> <i>The system shall meet the following minimum performance criteria, no exceptions of these requirements will be allowed:</i></p> <p>(1) The vehicle exhaust evacuation system must 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.</p> <p>(2) The Exhaust System shall not block doorways, exits, and aisles in the apparatus bay, which could endanger the welfare of emergency service responder personnel or visitors.</p>	<b>YES</b>	<b>NO</b>
<p><b>4.0</b> <b>STANDARD PRODUCTS</b></p> <p>Equipment and materials provided for the system installation(s) shall be manufactured and provided by the supplier of primary exhaust removal system (Equipment Manufacturer) and be a standard product of manufacturer currently engaged in the manufacturing of vehicle exhaust evacuation systems. Where the requirement calls for a packaged exhaust System to be provided, all items shall be the product of the manufacturer. No prototypes or private label products by other manufacturers will be allowed.</p>	<b>YES</b>	<b>NO</b>
<p><b>5.0</b> <b>QUALITY ASSURANCE</b></p> <p>If the manufacturer is ISO 9001:2000, UL and CUL Certified and certified by the Air Movement and Control Association (AMCA) to ensure quality, consistency and reliability of products, certification documents shall be provided and attached to the RFQ. 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 performance/technical specifications, the contractor shall remove and replace at his expense the materials in question.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.0</b> <b>Requirements of the Vehicle Exhaust Evacuation System</b></p> <p>Upon emergency vehicle(s) starting, the exhaust ventilation fan shall be automatically energized by a remote mounted pressure sensor.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.1</b></p> <p>The nozzle must release and disconnect near the threshold of the exit.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.2</b></p> <p>Due to the harmful effects of diesel exhaust, the system must be designed and capable of virtually capturing 100% of the exhaust gases and particulate even in the event of a complete power failure. The system shall not detach itself from the apparatus for any reason during a power failure other than normal exiting of the apparatus bay.</p>	<b>YES</b>	<b>NO</b>

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<p><b>6.3</b> Systems that require additional or alternate power source to eliminate detaching during power failure are not acceptable due to additional maintenance requirements.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.4</b> Nozzle design must create seal around tailpipe.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.5</b> The nozzle must attach directly to any size exhaust tailpipe by making virtually an air-tight seal around the vehicle's tailpipe when connected, to prevent exhaust gases and particulate from escaping through any opening when the vehicle's engine is at idle or accelerated to its maximum rotations per minutes.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.6</b> The tailpipe termination of the vehicle is a 90-degree angle (perpendicular) to vehicle body to prevent toxic exhaust fumes from being discharged rearward into station after the exhaust system nozzle releases at the door. All tailpipe termination must conform to this existing configuration.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.7</b> The manual connection of the nozzle to the tailpipe must be done from a standing position, without bending over. Bending over to connect nozzle to tailpipe is not acceptable due to increase of personnel's exposure to toxic diesel exhaust fume, which NIOSH lists as a hazardous material.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.8</b> To protect personnel and adjacent apparatus, vehicle exhaust evacuation system must incorporate an external release mechanism to ensure nozzle disconnect from tailpipe.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.09</b> The nozzle release mechanism must be utilized to insure disconnect of nozzle from tailpipe. Systems that do not use this feature are not acceptable due to safety issues.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.10</b> The nozzle release mechanism must be adjustable so it may be placed anywhere over the entire length of track or rail.</p>	<b>YES</b>	<b>NO</b>
<p><b>6.11</b> All flexible upper hoses shall be 5 inches in diameter for ease of handling and to minimize space requirements on the apparatus floor. Flexible hose greater than, or less than 5 inches in diameter are not acceptable. Flexible hose shall be high temperature synthetic rubber impregnated into a high temperature laminated fabric. Flexible hose shall be rated for 400 degrees (F) continuous, 500 degrees (F) intermittent temperature to ensure durability. Wire helix must be bound and protected in lamination. Wear strip shall be safety high visibility to further protect hose. Hose with exposed wire helix is not acceptable. <b>Note: Sample Required with RFQ</b></p>	<b>YES</b>	<b>NO</b>

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<p><b>6.12</b> All lower hoses shall be a rigid 5” or 4” diameter by 2-foot long section of hose. Lower hose shall support the magnetic connection nozzle and reducing elbow in a rigid fashion to allow for the operator to place hose collection nozzle onto the tailpipe without bending over. Lower hose is the only section of hose, which shall disconnect from the upper hose assembly and act as a safety disconnect in the unlikely event the nozzle gets entangled. Hose material shall be high temperature synthetic impregnated into a high temperature laminated fabric and be 3 ply laminations or more thick. This construction of hose must be capable of operating at continuous temperatures of 850 degrees F and intermittent temperatures of 1200 degrees F such as are experienced when vehicle checks are performed inside the station. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.13</b> The system hose shall be capable of maintaining continued use integrity, without degradation from engine idle at 1000 rpm, for a minimum of 20 minutes of engine idle.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.14</b> Each exhaust hose drop on the system shall be designed with a swiveling safety disconnect handle to protect the systems integral parts, and to assist in the loading and unloading of the exhaust system hose onto the exhaust tailpipe. <b>Note: Sample Disconnect Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.15</b> A safety disconnect coupling handle shall completely separate the lower nozzle section from the upper hose assembly. This safety disconnect handle shall eliminate premature disconnect and shall 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 under carriage of the vehicle.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.16</b> The safety disconnect coupling handle shall allow for the lower section of hose to swivel 360 degrees.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.17</b> The safety disconnect coupling handle must be reusable. The use of external or internal release cables on the safety disconnect coupling handle, which may catch, or snag on firefighters gear are not acceptable. An injection molded composite body with 360 deg rubber bumper to protect the vehicle and disconnect from wear shall be incorporated in the design of the system.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.18</b> The safety disconnect coupling handle shall consist of two aluminum inner flange collars connected by an easy reconnection mechanism.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.19</b> To protect the fire apparatus, the exhaust system shall not incorporate any type of metal handle that attaches to the exhaust hose to assist in the loading and unloading of the exhaust system hose onto the exhaust tailpipe.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

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<p><b>6.20</b> A system that must be disconnected and must not be exposed to water when washing the vehicle is not acceptable.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.21</b> Manufacturer of the vehicle exhaust evacuation system must warrantee all fans and electrical components utilized, installed and associated as part of the vehicle exhaust evacuation system.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.22</b> Manufacturers for the Vehicle Exhaust Evacuation System electrical components must be Underwriters Laboratory certified.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.23</b> The Contractor submitting the RFQ must be the installing contractor and provider of service for the duration of the warranty period and continuing throughout entire period of usage of system.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.24</b> As required by the International Mechanical Code and the Uniform Mechanical Code for conveying hazardous materials, all connections including to tailpipe must be securely fastened and sealed.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.25</b> Systems must utilize adaptors which mates with a nozzle connection in order to secure nozzle to tailpipe in a fastening mode.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.26</b> Systems must have adjustable slotted style openings in mating adapters to allow for ambient air dilution in the nozzle and hose.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.27</b> System must be designed to ensure hose is hung at a height that will not block entrance to vehicle compartments or block aisle access between vehicles.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.28</b> Systems that require disconnection of nozzle from vehicle when working on vehicle's fuel system, recharging batteries or whenever there is a risk of inflammable dust or explosive gases, are not acceptable.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.29</b> System must comply completely with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition and 2007 Edition of NFPA.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.30</b> If the manufacturer is an ISO 9001:2000 Certified Company with Certification issued to United States Facility. Copy of Certificate must be supplied with RFQ documents.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.31</b> To ensure safe and effective fastening and disconnect of system at vehicle tailpipe, systems must utilize an adjustable external release mechanism.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>



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<p><b>6.32</b> System must utilize a release mechanism design to ensure safe and controlled disconnect of nozzle from tailpipe connection.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.33</b> Due to the harmful effects of vehicle exhaust emissions and NFPA requirements; system must be a sealed source capture system designed and capable of virtually capturing 100% of all vehicle exhaust emissions during vehicle operation.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.34</b> Systems, which require tailpipes or their adapters to protrude beyond the outside edge of chassis, are not acceptable due to NFPA 1901, 2009 requirements.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.35</b> The tailpipe adapter of the exhaust system shall be made from stainless steel and shall have adjustable air intake slots built-in the adapter.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.36</b> The exhaust system nozzle shall be available in three (3) sizes. 5-inch for larger tailpipes and 4 and 3-inch for smaller tailpipes. <b>Note: Two (2) Sample Nozzles of choice Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>6.37</b> The manufacturer of the electric fans installed within the vehicle exhaust evacuation system must be AMCA Certified as a standard product of contractor.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.</b> <b>The Exhaust Evacuation Equipment</b> shall be delivered and installed as a <b>Magnetic Sliding Balancer Track Type System</b> only, equal to the following specifications:</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.1</b> The track must be a minimum of 19 feet long <b>one-piece</b> extruded aluminum with channel to accept ball bearing rollers of the traveling trolley on bottom side. Rubber impact end stops shall be mounted on each end of the track.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.2</b> The traveling trolley shall be galvanized steel assembly with four upper ball bearing wheels to fit inside track profile and two lower ball bearing wheels to fit on outside of track profile to prevent rocking or shifting of the trolley as it moves along full length of track.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.3</b> Flexible upper hoses shall meet or exceed the specifications written in section 6.11. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.4</b> The lower hoses shall meet or exceed the specifications written in section 6.12. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>7.5</b> Flexible hose assembly shall not be allowed to touch or rub the body of any vehicle at anytime. No attachments to the body of the vehicle are permitted.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

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<p><b>7.6</b> No mechanical attachments or alteration of the vehicle is permitted except for tailpipe modification as outlined above under tailpipe termination.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.7</b> The transition from the magnetic nozzle to the flexible hose shall be one-piece construction to prevent leaks of exhaust fumes. The transition shall be stainless steel due to temperature requirements and shall be resistant to road salt and the apparatus bay environment. The transition shall also be chrome plated.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.8</b> Transition shall have a metal debris screen to prevent foreign material from damaging the flexible hose or exhaust blower.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.9</b> Nozzle design must create positive seal around tailpipe with use of mating band that provides ambient air intake. The Nozzle shall be engineered and designed with rare earth magnets that are strategically positioned on the face of the collection nozzle. The collection nozzle shall also incorporate a protective rubber safety cover to avoid damage to vehicle and surroundings.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.10</b> Nozzle design must provide metal encapsulated magnets due to tailpipe and vehicle exhaust temperatures and to accept tailpipe with the use of mating adapter to ensure tight fit and virtually capture 100% of exhaust fumes.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.11</b> The tailpipe adapter shall be a conical design for aiding in the connection and release of the collection nozzle from the fire apparatus. The magnets shall only make contact with the face of the adapter located on the tailpipe.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.12</b> The tailpipe adapter shall be designed with a snag free smooth surface</p>	<b>YES</b>	<b>NO</b>
<p><b>7.13</b> The spring balancer must be self-adjusting enclosed type with stainless steel cable to support hose assembly at proper height of hose during travel along the track. Systems that incorporate locking type balancers or external/internal cable of nylon or fabric type are not acceptable.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.14</b> Spring balancer shall support and keep all hose at acceptable height when vehicles are in their parked positions.</p>	<b>YES</b>	<b>NO</b>
<p><b>7.15</b> The Magnetic nozzle must easily align with adapter and operate from a standing position to connect magnetic nozzle to tail pipe. When track mounted release is activated, the magnetic nozzle will automatically release.</p>	<b>YES</b>	<b>NO</b>

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<p><b>7.16</b> Protection must be provided where the spring tension cable attaches to the hanging hose. This protection shall be a metal elbow to withstand the surrounding environment and temperatures without causing degradation to the hose.</p>	YES	NO
<p><b>7.17</b> Nozzle construction shall be made from metal to PROVIDE A PRIMARY TEMPERATURE AND FRICTION BARRIER.</p>	YES	NO
<p><b>7.18</b> EPDM rubber nozzles are not acceptable.</p>	YES	NO
<p><b>7.19</b> Magnets must make direct open contact with tailpipe nozzle to ensure magnet to metal connection.</p>	YES	NO
<p><b>7.20</b> To fully protect nozzle magnets, design must prevent magnets from exposure to the vehicle exhaust and its temperatures. Metal to magnets connections must be kept out of vehicle exhaust air stream and nozzle must provide ambient air dilution.</p>	YES	NO
<p><b>7.21</b> For ease of use, the proposed system nozzle shall not be required to perfectly align to the tailpipe adapter for system connection.</p>	YES	NO
<p><b>7.22</b> The tailpipe adapter of the exhaust system shall be made from stainless steel and shall have adjustable air intake slots built-in the adapter.</p>	YES	NO
<p><b>8.</b> <b><i>The Exhaust Evacuation Equipment</i></b> shall be delivered and installed as a <b><i>Magnetic Straight Rail Type System</i></b> only, equal to the following specifications:</p>	YES	NO
<p><b>8.1</b> The straight rail is to be one piece extruded aluminum of 19.5 ft. length with bottom rubber seals and traveling crab trolley with sealed bearing loaded wheels designed to roll outside the internal rail profile. As the traveling crab trolley moves it shall continue to provide a seal to prevent fumes from escaping. Rubber impact end stop is to be mounted on rear end of the rail. Rail must be capable of inserting a maximum of four trolleys total.</p>	YES	NO

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<p><b>8.2</b> Traveling external crab trolley shall be epoxy coated aluminum and steel assembly with ball bearing wheels to fit outside rail profile and tapered cone design with independent wheels to separate rubber sealing lips to insure smooth travel along full length of rail. Systems utilizing internal crabs are not acceptable.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.3</b> A hydraulic brake system shall be incorporated into front-end cap of suction rail profile. It must have an adjustable hydraulic shock capable of reducing forward impact of traveling crab trolley.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.4</b> Flexible upper hoses shall meet or exceed the specifications written in section 6.11. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.5</b> The lower hoses shall meet or exceed the specifications written in section 6.12. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.6</b> Flexible hose assembly shall not be allowed to touch or rub the body of any vehicle at anytime. No attachments to the body of the vehicle are permitted.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.7</b> No mechanical attachments or alteration of the vehicle is permitted except for tailpipe modification as outlined under tailpipe termination.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.8</b> The transition from the magnetic nozzle to the flexible hose shall be one-piece construction to prevent leaks of exhaust fumes. The transition shall be stainless steel due to temperature requirements and shall be resistant to road salt and the apparatus bay environment. The transition shall also be chrome plated.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.9</b> Transition shall have a metal debris screen to prevent foreign material from damaging the flexible hose or exhaust blower.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.10</b> Nozzle design must create positive seal around tailpipe with use of mating band that provides ambient air intake. The Nozzle shall be engineered and designed with rare earth magnets that are strategically positioned on the face of the collection nozzle. The collection nozzle shall also incorporate a protective rubber safety cover to avoid damage to vehicle and surroundings.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>8.11</b> Nozzle design must provide metal encapsulated magnets due to tailpipe and vehicle exhaust temperatures and to accept tailpipe with the use of mating adapter to ensure tight fit and virtually capture 100% of exhaust fumes.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

# Mauldin Fire Department

## *Vehicle Exhaust Evacuation System Specifications*

<p><b>8.12</b> The tailpipe adapter shall be a conical design for aiding in the connection and release of the collection nozzle from the fire apparatus. The magnets shall only make contact with the face of the adapter located on the tailpipe.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.13</b> The spring balancer must be self-adjusting enclosed type with stainless steel cable to support hose assembly at proper height of hose during travel along the track. Systems that incorporate locking type balancers or external/internal cable of nylon or fabric type are not acceptable.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.14</b> Spring balancer shall support and keep all hose at acceptable height when vehicles are in their parked positions.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.15</b> The Magnetic nozzle must easily align with adapter and operate from a standing position to connect magnetic nozzle to tail pipe. When track mounted release is activated, the magnetic nozzle will automatically release.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.16</b> Protection must be provided where the spring tension cable attaches to the hanging hose. This protection shall be a metal elbow to withstand the surrounding environment and temperatures without causing degradation to the hose.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.17</b> Nozzle construction must be metal encapsulated magnets to PROVIDE A PRIMARY TEMPERATURE AND FRICTION BARRIER.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.18</b> EPDM rubber nozzles are not acceptable.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.19</b> Magnets must make direct open contact with tailpipe nozzle to ensure magnet to metal connection.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.20</b> To fully protect nozzle magnets, design must prevent magnets from exposure to the vehicle exhaust and its temperatures. Metal to magnets connections must be kept out of vehicle exhaust air stream and nozzle must provide ambient air dilution.</p>	<b>YES</b>	<b>NO</b>
<p><b>8.20</b> Each drive-thru straight rail system shall be designed with an automatic hose &amp; crab retrieval system so that when the nozzle automatically disconnects from the vehicle at exit, it will automatically return to the rear of the apparatus bay ready to be reconnected when the vehicle returns for re-entry into the station. This is considered to be a health &amp; safety feature as it further ensures that the vehicle exhaust removal system is attached at the rear door upon re-entry of the vehicle to the apparatus bay. <b>Note: Sample Video with Audio of auto crab return system Required on a Flash Drive w RFG</b></p>	<b>YES</b>	<b>NO</b>

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## Vehicle Exhaust Evacuation System Specifications

<p><b>9.</b></p> <p><b><i>The Exhaust Evacuation Equipment shall be delivered and installed as a Vertical Stack Rail Type System only, equal to the following specifications:</i></b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.1</b></p> <p>The vertical stack rail shall be one-piece continuous extruded aluminum rail in a minimum length of 19 feet (580 mm). Construction Profile: Rectangular profile , rail height of 10 inches (254 mm) including the rubber seals, rail thickness of 0.20 inch (5 mm), width of 8-½ inches (216 mm) id. Bottom Portion of Rail: Continuous slots to accept a rubber seal. Rubber Seals: Fitted into each side of the rail and shall join in the middle. Rail Material: Aircraft aluminum alloy Type AA-6063 (ASTM B209/B209M). Rail: Extruded as a one piece design unit to maximize the structural integrity of the rail and to minimize joints which may add to possible leakage of dangerous exhaust gases.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.2</b></p> <p>The trapeze mounting support shall be supplied by the manufacturer to ensure the integrity of the installation. A minimum of one trapeze support with appropriate bracing shall be provided for every 10 linear feet (3048 mm) to 12 lineal feet (3658 mm) of rail profile. Trapeze Mounting Support: Free floating side to side track assembly and have a minimum travel of 18 inches (457 mm) from the natural rest position center line from the exhaust stack.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.3</b></p> <p>The rail splicing joint shall be formed steel fitting equal to the internal diameter of the suction rail profile. The splice shall have a wall thickness of no less than 0.190 inch (4.8 mm) in thickness and a length of no less than 8 inches (203.2 mm) from end to end.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.4</b></p> <p>The flexible duct connection shall be formed to fit an eight inch diameter flexible duct pipe located on the top side of the rail. Included with this fitting shall be a flexible hose manufactured of 600 degree Teflon construction with an overall length of five feet. The rail duct connection shall be a 6 inch (152.4 mm) diameter round transition fitting fabricated from 20 gauge galvanized steel (ASTM A653/A653M).</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.5</b></p> <p>The vertical stack adapter shall be ceramic-coated steel specially designed to be accepted into extraction rail. The color of the ceramic coating shall be chrome in color. Outlet dimension of vertical stack adapter must equal inlet dimension as measured of stock exhaust system provided on vehicle. Cone shall be secured to exhaust stack by means of slided female end provided on adapter and compression type nelson, tite lock draw band.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>9.6</b></p> <p>The exhaust stack catcher shall be constructed of 14 gauge zinc plated steel plated in a shape of a V formed box, opened underneath, which is also strengthened with a welded square steel section. This catcher must accommodate the exhaust cone, mounted on the vertical exhaust pipe of the vehicle. Catcher shall position exhaust automatically inline with extraction rail. Catcher shall have a minimum width of 27" and a minimum acceptance height of 6".</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

# Mauldin Fire Department

## Vehicle Exhaust Evacuation System Specifications

<p><b>10.0</b>  <b>Automatic Start Electrical Control Panel</b>          The control panels and electrical components engineered and installed for the Vehicle Exhaust Extraction System shall be manufactured by a UL recognized and listed manufacturer. Control panels shall carry the UL listing label as an “Enclosed Industrial Control Panel”. Individual components listed by UL shall not satisfy the above requirement. Electrical equipment manufacturer must undergo inspections as outlined by UL requirements and standards. <b>Note: Sample Required with RFQ</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.1</b>          The control panel shall contain the motor starter overload relay electronic timer, 24 volt transformer, indicator light and manual-auto-spring loaded off selector switch in a NEMA 12 rated key lock electrical enclosure with pressure.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.2</b>          Control panel must be provided with spring loaded off safety feature which returns switch to fan auto setting upon release when turning system fan off to ensure fan can never be left in off position. This guarantees fan operation and removal of hazardous exhaust as codes require. <i>This safety feature is a mandatory requirement.</i> Systems that only have on/off switches are not acceptable.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.3</b>          Control panel must have system indicator LED lights on the soft touch membrane controls.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.4</b>          The control panel shall contain the motor starter, overload, solid-state circuit card with timer adjustments from 7 to 360 seconds, fused low voltage transformer, in a NEMA 12 rated key lock electrical enclosure.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.5</b>          All system control boxes shall be provided with a key – lock integrated locking system. Padlock clasp system is not acceptable.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.6</b>          Each drop shall include one (1) 24-volt pressure sensor, which shall signal the start of the exhaust blower. The variable timer shall keep the connectors energized. After the time has expired, the exhaust blower will shut off. There shall be one sensor per vehicle, and shall be wireless from each drop.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>10.7</b>          Soft touch AUTO START- STOP - MANUAL RUN membrane controls shall be on the face of the control panel.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

# Mauldin Fire Department

## *Vehicle Exhaust Evacuation System Specifications*

<p><b>10.8</b> Controls that require electrical or pneumatic devices installed on the vehicle to activate the exhaust blower are not permitted. These additional after market devices may cause interference with original equipment and cause a delay in response time.</p>	<b>YES</b>	<b>NO</b>
<p><b>10.9</b> The automatic control panel shall be UL listed and manufactured in accordance with Underwriters Laboratories standard UL-508. Panel must be listed by and bear the UL label.</p>	<b>YES</b>	<b>NO</b>
<p><b>10.10</b> The control box must have manufacturer's outside full door covering decal with soft touch membrane controls which shall be marked and function as:</p> <ol style="list-style-type: none"> <li>1. <u>AUTO START</u>: This LED shall show the system is in full automatic mode of operation and electrical power is supplied to the control panel.</li> <li>2. <u>FAN ON</u>: This LED shall show that electrical power is supplied to the exhaust blower.</li> <li>3. <u>STOP</u>: 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.</li> <li>4. <u>MANUAL RUN</u>: This LED shall show the exhaust blower is operating in a continuous mode until interrupted by the STOP mode being activated.</li> <li>5. <u>NO AIRFLOW ALARM</u>: This shall monitor the exhaust blower and advise when the exhaust blower is not operating properly</li> </ol>	<b>YES</b>	<b>NO</b>
<p><b>10.11</b> The Vehicle Exhaust Extraction System's Manufacturer must be UL certified and supply certificate.</p>	<b>YES</b>	<b>NO</b>
<p><b>10.12</b> No electrical alteration or installation of electrical devices of or on the vehicle is permitted.</p>	<b>YES</b>	<b>NO</b>
<p><b>11.0</b> <b><i>Exhaust blower (Shall meet or exceed Class B)</i></b> The fans shall be a direct drive centrifugal type Class B, high pressure, single width, and single inlet as required or indicated. Impeller wheels shall be of a radial design for high static pressure performance. Impeller wheels shall be spark resistance and made of Almag material to prevent static electricity build up. The impeller shall be dynamically and statically balanced and of the non-overloading type to provide maximum efficiency while achieving quiet, vibration-free operation. The fan housing shall be manufactured from a metal material or approved equivalent. The outlet configuration shall be top horizontal, bottom horizontal, or upblast. The housing shall be capable of field re-configuration in the event the mounting position needs to be changed for unforeseen reasons.</p>	<b>YES</b>	<b>NO</b>



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## Vehicle Exhaust Evacuation System Specifications

<p><b>11.1</b> Blower must provide <u>minimum</u> conveying velocities of 3500-4000 FPM and capture velocities of 5500 to 6000 FPM as required by Uniform Mechanical Code without usage of ambient air, 500-600 cfm per drop measured at the safety disconnect handle.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>11.2</b> 1. All 1 to 15 horsepower motors shall be totally enclosed fan cooled (TEFC) continuous duty rated. The motors shall be dual voltage where applicable. Motors built after October 27<sup>th</sup>, 1997 shall comply with the government mandated "Energy Policy and Conservation Act" (EPACT) as outlined by the Department of Energy, and shall also comply with the new Energy Independence and Security Act (EISA) regulations. EISA requires greater blower motor efficiency levels on integral horsepower motors to reduce energy consumption and to meet the National Electrical Manufacturers Association (NEMA) premium efficiency levels. The bearings shall be self-aligned, ball bearing type permanently sealed and lubricated. The exhaust discharge outlet shall be in compliance with UMC code ref.505.9 (2) and ACGIH recommendations (min. of 36" above roofline). Air intakes, windows, cascade systems, prevailing currents, communication equipment and building aesthetics shall be considered in the final location of the fan. (1) <b>Teflon Shaft Seal:</b> The fan shaft shall be steel and rotate in a non-sparking TEFLON seal to prevent leakage and to prevent hot exhaust gases from coming into contact with the motor bearings. (2) <b>Variable Speed Drive:</b> The motor shall be compatible with a variable speed drive unit.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>11.3</b> The exhaust fans/blowers engineered and installed by the vehicle exhaust evacuation system manufacturer, shall have prior AMCA certification.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>11.4</b> Copy of Air Movement &amp; Control Association International, Inc. Certification Page in the name fan/blower manufacturer shall be attached.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>12.0</b> <b>DUCTWORK</b> It must meet or exceed criteria for construction and performance as outlined in <b>Round Industrial Duct Construction</b> Standards, SMACNA. Materials of construction unless otherwise specified for all ductwork and fittings shall be in accordance with ASTM-A653 and A924.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>12.1</b> All ductwork subject to positive or negative pressure shall be of round spiral pipe construction, with the range of available sizes not to exceed 16 inches in diameter. Duct gauge shall depend on diameter and a minimum operating pressure of +10 inches water gauge.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

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## *Vehicle Exhaust Evacuation System Specifications*

<p><b>12.2</b> All exhaust fittings shall be round and have a wall thickness 2 gauges (one even gauge number) heavier than the lightest allowable gauge of the downstream section of duct to which they are connected in accordance with ASTM-A653 and A924. Air duct branch entrances shall be factory fabricated fittings or factory fabricated duct /tap assemblies. Fittings shall be constructed so that air streams converge at angles no greater than 45 degree. All seams shall be continuous stitch welded and if necessary internally sealed to insure air tightness. Turning elbows shall be stitch-welded and used for all diameters and pressures. They shall be fabricated be in accordance with ASTM-A653 and A924, and constructed as two-piece with continuous welded seam construction fittings. Tapered Body Fittings shall be used wherever particular fallout is anticipated and where airflow is introduced to the transport duct manifold.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>12.3</b> Ductwork to be of the taper design to maintain constant velocities without the need for dampers to balance the system.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>12.4</b> Ductwork shall be sized for the exact inlet and outlet of the exhaust fan blower. The external ductwork shall be galvanized. An exhaust low profile 45-degree style outlet with bird screen shall be included per exhaust fan/outlet. The contractor shall also incorporate a galvanized sound attenuator on fans larger than 3Hp being installed.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>13.0</b> <b>INSTALLATION</b> Installation of Vehicle Exhaust Evacuation System to include mounting the track assemblies with cross braces and supports to ceiling. All penetrations of the exterior and interior brick walls <b>must be core drilled</b> by installing contractor to allow ductwork to pass through or exit the building.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>13.1</b> Provide complete electrical connections into facility system in compliance with electrical codes. Installer to provide all necessary sub panels if needed.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>14.0</b> <b>TRAINING</b> Training is to be provided by the Contractor at the time of installation to the Fire Department Staff for the use and operation of the vehicle exhaust evacuation system.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

# Mauldin Fire Department

## Vehicle Exhaust Evacuation System Specifications

<p><b>15.0</b> <b>WARRANTY, INSPECTIONS AND SERVICE</b></p> <p>The manufacturer and Certified Distributor of the vehicle exhaust evacuation system shall indicate a full warrantee to include, but not limited to replacement of all installed equipment/materials, fans/blowers, control boxes, associated electrical, and all labor. This warranty shall also include periodic system checks and service location. Write in the warranty, system check interval and service location in the appropriate spaces provided. Failure to indicate warranty period, periodic system checks, and service location will result in forfeiture of RFQ.</p> <p>Indicate Warranty Period Here: _____</p> <p>Indicate System Periodic Check Period Here: _____</p> <p>Indicate Closest Service Center Here: _____</p> <p>Indicate Service Response Time Here: _____</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>15.1</b></p> <p>The Contractor shall provide to the department a competent service plan outlining the periodic adjustments, and frequency. The response time on all service calls shall be included with this RFQ. The contractor must be a full stocking distributor engaging in the day-to-day operations of emergency vehicle exhaust removal systems.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>16.0</b> <b>ADMINISTRATION</b></p> <p>Contractor shall list only their previous completed installations of vehicle exhaust evacuation systems within the past three years. Information shall include agency name, agency contact person and title, address, phone number.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>16.1</b></p> <p>A list of all installations made by the Contractor in Fire Department/EMS Stations must be included with RFQ.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>16.2</b></p> <p>All Fire Department apparatus tailpipes if modified shall be modified by the Contractor as required to accommodate tail pipe nozzles and stack adapters.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>
<p><b>16.3</b></p> <p>Contractor shall provide independent Hose testing and certification by third party independent Testing Lab for exhaust hose, temperature ratings completed and provided with the RFQ.</p>	<p><b>YES</b></p>	<p><b>NO</b></p>

# Mauldin Fire Department

## *Vehicle Exhaust Evacuation System Specifications*

**FEE SCHEDULE PER STATION (TOTAL PER FIRE STATION) Appendix A**

STATION	ADDRESS	NUMBER OF DEOPS	PRICE
Headquarters	East Butler Road Mauldin, SC 29662	4	\$
1 - Substation	802 Miller Road Greenville, SC 29607	2	\$
2	300 Rocky Creek Road Greenville, SC 29614	4	\$
			\$

**Note: All pricing shall include SC sales tax.**

**CONTRACTOR SIGNATURE:** \_\_\_\_\_

**Full Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email Address:** \_\_\_\_\_

# Mauldin Fire Department

## *Vehicle Exhaust Evacuation System Specifications*

### EXCEPTION FORM VEHICLE EXHAUST EXTRACTION SYSTEM

#### EXCEPTIONS FROM RFQ

Please list all exceptions you are taking to the above. List section number, and in detail the reason for the exception and your proposed change to this Item or function.

1)

2)

3)

4)

5)

6)

7)

8)