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Vapor Mitigation System Operating Maintenance and Monitoring

Overview

A vapor mitigation system has been installed since 2015 at Jagemann Plating Company at 1324 S. 26th St in Manitowoc WI. This sub slab depressurization (SSD) system creates negative pressure in the soil below the foundation and creates a pathway for volatile organic compounds in soil vapor to be exhausted above the building. This reduces exposure to people working inside the building.

System components

Pictures of system components are included in the attached OM&M Log sheet. A basic layout of the system is diagramed in Figure 1. All piping is 3 inch diameter schedule 40 PVC. The fan is a Radon Away brand model RP265. Per the manufacturer, this fan operates between 95-139 watts, generating 204 cubic feet per minute of air at 1 inch of static pressure. An electrical disconnect is installed next to the fan on the outside of the building. The floor penetration is sealed with waterproof 100% silicone caulk. The foundation floor creates an adequate barrier to interrupt vapor pathway enough for the SSD to be effective.

System Modification

Notify the DNR 45 days before modifying any features of the SSD. This includes renovation of the existing structure, construction of any additional buildings, or changes to the foundation. These changes can reduce the effectiveness of the vapor mitigation system. Consult with a mitigation professional before making any modification to the existing vent pipe.

Decommissioning:

Vapor mitigation for chlorinated volatile organic compounds is often necessary indefinitely. The system is designed to run continuously, and the fan should be kept in working order. To decommission this system, a certified company may conduct a test for volatile organic compounds after the fan has been turned off for a period of 30 days. It is not recommended to turn off the fan while the building is occupied. If a test completed by a certified 3rd party shows VOC levels within EPA safe levels, a professional mitigation company can create a decommission plan including a cost estimate and submit it to the DNR. Allow 45 days before implementing the decommission plan to allow for DNR approval. It is also recommended to test for radon before decommissioning, as radon mitigation is an additional benefit of SSD systems.

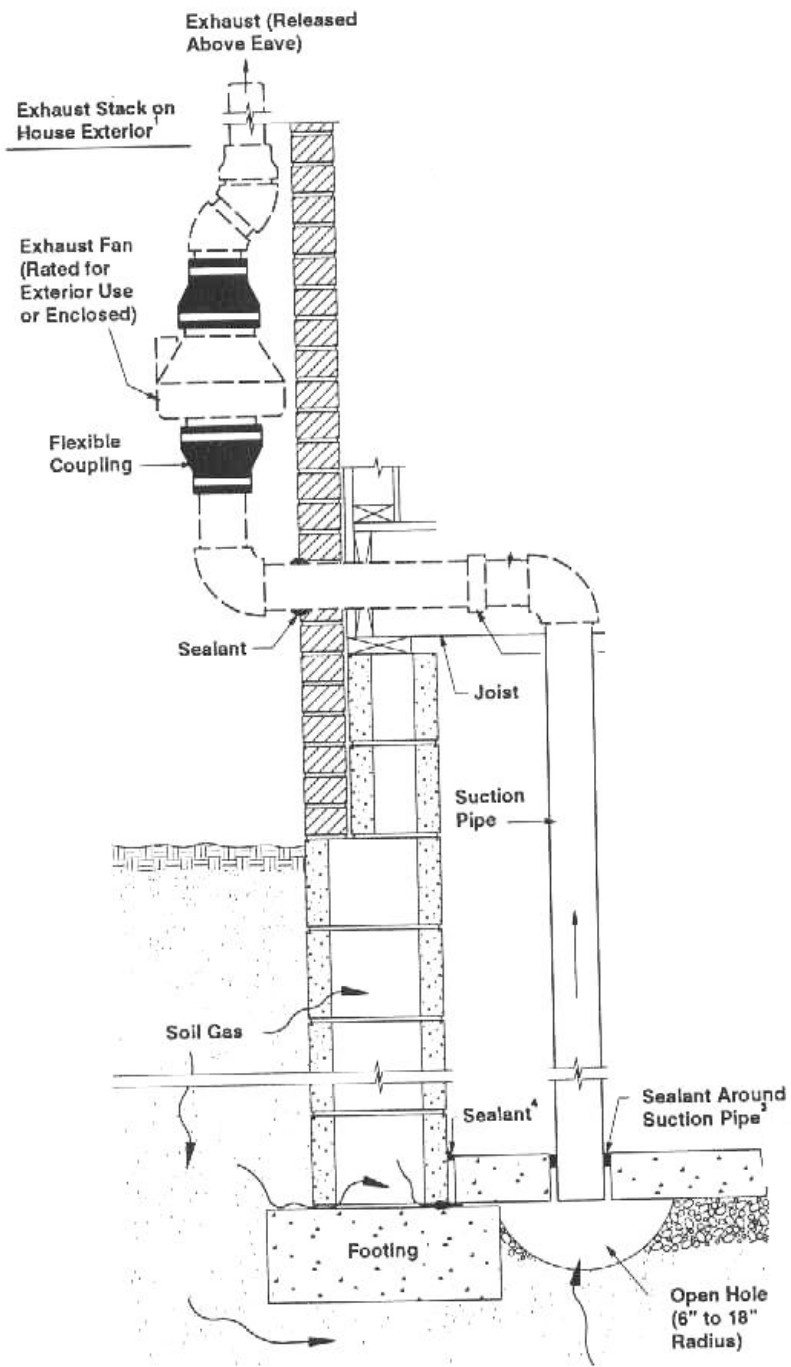







Figure 1: Basic layout of sub slab depressurization

SYSTEM COMPONENT		WHAT DOES IT DO?	WHAT DO I CHECK?	WHAT SHOULD I SEE?	WHAT TO FIX?	ANNUAL INSEPECTION						GENERAL NOTES
NAME	PHOTO					DATE	NOTES	DATE	NOTES	DATE	NOTES	
Fan		<p>Fan creates a vacuum and lowers pressure below foundation.</p> <p>The fan also removes soil gases from below foundation for discharge to atmosphere.</p>	<p>Fan Operation</p> <p>Fan Location</p> <p>Motor Noise</p>	<p>Fan is on</p> <p>Fan mounted outside & secure</p> <p>Fan motor is quiet (loud motor may indicate problem)</p>	<p>Fan may need to be replaced every 10 to 20 years.</p> <p>Replacement fan to have similar specifications as original with respect to flow and vacuum.</p> <p>ORIGINAL = Model RP265</p>							
Suction Point		<p>Soil gases are collected in drain tile below the foundation, and tight seal prevents soil gas from getting inside the structure.</p> <p>Pipe conveys the vacuum from the fan, and collects soil gases for discharge to the atmosphere.</p>	<p>Pipe and Floor Seal Integrity</p> <p>Vent Pipe Condition</p>	<p>Floor seal is air tight around edge and at pipe penetrations.</p>	<p>Floor seals or vent pipe may need to be re-sealed or replaced if cracks or leaks appear.</p> <p>See NOTE below regarding pipe alternations. Have professional test pressures if pipes are modified</p>							
Manometer or Differential Pressure Gauge		<p>Measures differential pressure between vacuum side of vent pipe and indoor space.</p> <p>This measurement confirms there is a vacuum being pulled by the fan.</p>	<p>Liquid Level on Manometer</p>	<p>Liquid level in manometer is between 0.2 and 1.0 on the right-hand side.</p>	<p>A change in liquid level indicates a change in the vacuum below foundation. This could be caused by failure of fan, blockage of vent pipe, change in water level below building, or other conditions.</p> <p>Troubleshoot or hire professional to identify cause and repair if needed.</p>							
Outdoor Vent Pipe		<p>Pipe carries soil gas outside and vents them to the atmosphere.</p>	<p>Vent Pipe Condition</p> <p>Vent Pipe Location</p>	<p>Vent pipe remains connected to fan.</p> <p>End of pipe free from obstructions.</p> <p>The exhaust is more than 15 feet from windows or air intakes.</p>	<p>Vent pipe may require replacement, or cleaning to remove ice or debris.</p> <p>See NOTE below regarding pipe alternations. Have professional test pressures if pipes are modified.</p>							
Foundation Floor		<p>The basement foundation is an important barrier that minimizes soil gas entry into building, and helps the fan to work efficiently.</p>	<p>Foundation Condition</p> <p>Foundation Footprint</p>	<p>No penetrating cracks or holes in foundation below grade.</p> <p>Check if there have been alterations or additions to building.</p>	<p>Seal cracks or other penetrations as you would to prevent water from entering.</p> <p>If building floor plan has changed, contact a professional contractor and/or the DNR to evaluate if modifications to the vapor mitigation system are necessary.</p>							

NOTE: Minimize alternations to vent pipes. Changes to fittings, diameter, material type, or number of bends, can cause pressure losses that make system less effective.