Tech Brief

The Use of Vacuums to Clean Sawed Pavement Joints

January 2025

INTRODUCTION

Sawing joints in concrete pavements potentially exposes workers to respirable crystalline silica dust which may increase the risk of health issues. OSHA has standards designed to protect workers from these risks: Respirable Crystalline Silica Standard (29 CFR 1926.1153) and Respiratory Protection Standard (29 CFR 1910.134) among others[1,2,3]. See **Figure 1**.

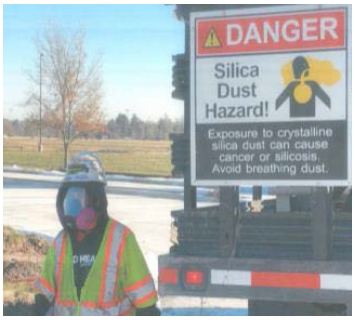

Figure 1
Safety Warnings

This Tech Brief is not intended to address the health risks, but instead to provide information on devices which can be used to minimize them. Specifically, the use of vacuum equipment to extract slurry residue from the pavement surface and partially the joint.

Vacuuming and pressure washing during joint sawing, upcutting, and widening operations allows for a safer media blasting operation since the remaining laitance is greatly minimized.

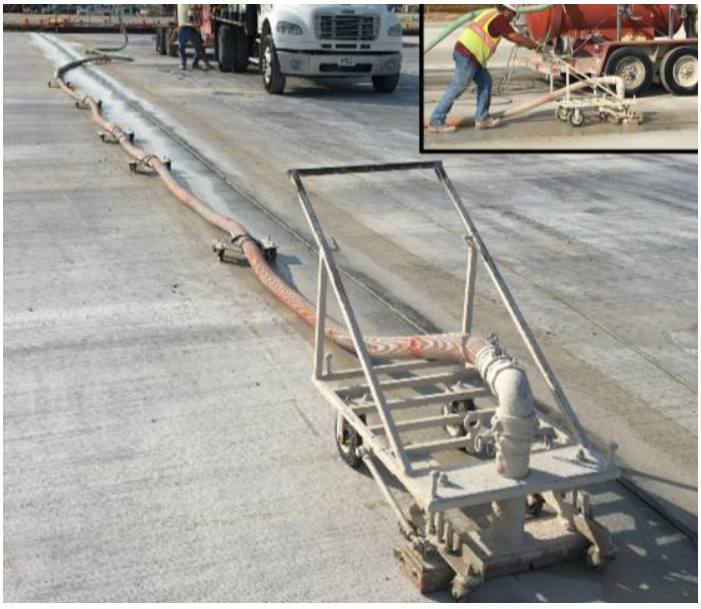

Figure 2
Photo of Wet Saw Vacuum Pickup Equipment

WET SAWING VACUUM EQUIPMENT

When properly conducted, wet sawing is acceptable under OSHA standards. However, once the slurry dries, it can become a problem if excessive amounts remain and there is a mechanism such as traffic or wind to make it airborne. In these situations, it may be desirable to use a vacuum during the sawing operation. **Figure 2** is a photo of a contractor constructed vacuum system for wet sawing.

It should be noted that the equipment used for vacuuming wet sawing is different than that used for early entry sawing. In **Figure 2**, the slurry recovery tank can be seen in the upper right-hand corner of the photo. The slurry tank allows the vacuum to work continuously until the tank is full. No filters are involved in the retrieval process.

Vacuuming of joints is more common on airfield construction than on highway construction. **Figure 3** indicates the cleaned joint after power washing and vacuuming.

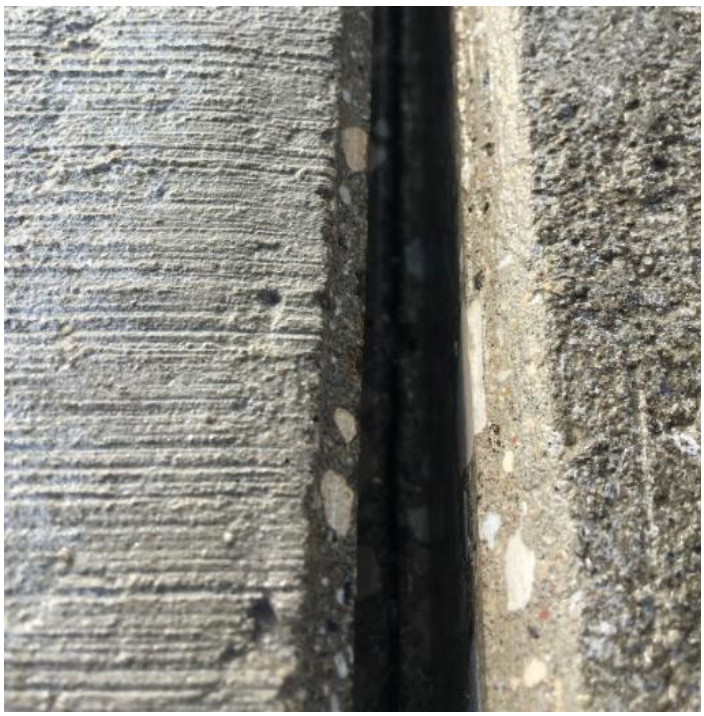

Figure 3
Photo of Wet Saw Joint Condition After Power Washing and Vacuuming

Figure 4
Photo of Concrete Remains from Early Entry Sawing without Vacuuming

EARLY ENTRY SAW VACUUM EQUIPMENT

Similar to wet sawing, if done properly, early entry sawing is acceptable under OSHA standards. However, **Figure 4** indicates the remains from an early entry sawing operation without vacuuming. Obviously, based on environmental and traffic conditions at a given site, the dried slurry may pose a problem.

Figure 5
Photo of Early Entry Saw Vacuum Pickup Equipment

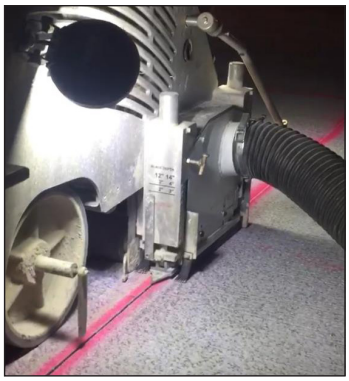

Figure 6
Photo of Early Entry Saw Joint With Vacuum Attachment

Figures 5 and **6** are photos of commercial vacuum equipment designed for early entry sawing. Note that this type of equipment uses HEPA filters that need to be cleaned out several times during a work shift to keep them functioning properly. Note also that there is a need for a second person to push the vacuum as with the wet saw vacuuming.

REFERENCES

[1] OSHA Fact Sheet, “OSHA’s Respirable Crystalline Silica Standard for Construction”, Occupational Safety and Health Organization, 2017

[2] OSHA Fact Sheet, “Control of Silica Dust in Construction Walk-behind Saws”, Occupational Safety and Health Organization, 2017

[3] www.osha.gov/silica

Seal / No Seal GROUP

The Seal/No Seal Group was formed to respond to the age-old industry question about the value of sealing concrete pavement joints. Its mission is to develop a committed membership that takes responsibility for determining the long-term effectiveness of sealants in concrete pavements.

www.sealnoseal.org

IGGA
International Grooving & Grinding Association

The International Grooving & Grinding Association (IGGA) is a non-profit trade association founded in 1972 by a group of dedicated industry professionals committed to the development of the diamond grinding and grooving process for surfaces constructed with Portland cement concrete and asphalt. In 1995, the IGGA joined in affiliation with the American Concrete Pavement Association (ACPA) to form what is now referred to as the Concrete Pavement Preservation Partnership (IGGA/ACPA CP3). The IGGA/ACPA CP3 now serves as the lead industry representative and technical resource in the development and marketing of optimized pavement surfaces, concrete pavement restoration and pavement preservation around the world.

www.igga.net