



Best Practice

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Introduction

This document is a guideline that is intentionally structured as an overview to cover topics that may or may not be incorporated into a detailed plan for a sawing and drilling contractor to be more environmentally friendly and take advantage of possible LEED credits when applicable. This plan will be dependent on the specifics of each jobsite, coupled with the considerations of the work environment, the quality of work, the financial impact and safety aspects of that particular jobsite.

Most of the resources available on the subject of “green” construction practices focus primarily on the design and engineering plans of buildings. Limited resources are available on the construction and demolition practices carried out on the actual jobsite during the construction phase, including selective demolition for remodeling. This document is specific to the sawing and drilling industry, and provides insight and guidance in the creation of a site-specific plan for environmentally friendly working practices to be performed by sawing and drilling operators. The adaptive reuse of a building where sawing and drilling is required to accomplish the new configuration is the ultimate in sustainable development.

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1. Green Approach

The sawing and drilling contractor interested in a green, more environmentally-friendly operation should approach being green from planning and material procurement management to the final cleanup and waste disposal. Some of the following recommendations can be implemented beyond a single jobsite to involve company policies for day to day operational procedures spanning all of the contractor’s jobs. “Green” jobsites are typically noted in the bid documents. Note any additional documentation and procedural requirements which would impact a bid. An example would be documentation for LEED credits for a particular site.

2. Sawing and Drilling Operations

Sawing and drilling operations performed by cutting contractors typically involve water and the creation of slurry. In addition, these operations involve the generation of a large volume of concrete debris, expendable diamond/steel tooling (blades, bits and wire) and the use of large engines/motors for generating the power to perform the work (including oil, grease, hydraulic fluid and fuel). The maintenance of the equipment also involves recyclable materials such as batteries and certain types of metals.

The following section highlights just some of the areas where sawing and drilling companies can become green.

2.1. Slurry Recycling

Water/slurry collection, disposal and recycling for concrete sawing and drilling are becoming more of an issue for the industry. Each city, county, state, province and country is developing its own regulations and means to enforce them. Since there is no single standard to deal with water and concrete slurry, it is important for our association to take proactive efforts in dealing with our tools, techniques and procedures as well as with a growing list of regulations and enforcement groups who want to oversee them.

2.2. Concrete Recycling

Concrete debris is highly recyclable and represents a large volume of materials that cutting contractors should avoid disposing of as landfill bulk debris. When concrete is removed from a jobsite, it can be taken to concrete recycling process centers, where millions of tons of concrete are recycled each year. Generally, contractors experienced in green construction typically have separate dumpsters to enhance the recycling of various types of waste. Recycled waste rates can be 75 percent or higher. Consider coordinating concrete and slurry recycling with the ready-mixed concrete supplier and/or concrete masonry suppliers.

Recycling of concrete pavement is a relatively simple process. It involves breaking, removing and crushing concrete from an existing pavement into a material with a specified size and quality. Crushed concrete may be reused as an aggregate in new Portland cement concrete or any other structural layer. Generally, it is combined with a virgin aggregate when used in new concrete. However, recycled concrete is more often used as aggregate in a sub-base layer. Several advances have made recycling more economical for all types of concrete pavements in recent years. These include:

- Development of equipment for breaking concrete pavements such as unreinforced, mesh-and-dowel or continuously reinforced.
- Development of methods to remove steel that minimizes hand labor.
- Use and application of crushing equipment that can accommodate steel reinforcement.

Successful and economical recycling projects have included jointed plain pavement, jointed reinforced pavement, continuously reinforced pavement and even airport pavement over 17 inches thick.

Arrangements can be made to haul concrete from a demolition site to the recycling plant, or, **in some cases, recyclers are able to move portable recycling machinery to the demolition site. Some limitations apply to size and weight for handling the debris.**

In terms of the overall environment, recycling concrete greatly saves energy compared to mining, processing and transporting new aggregates. And while not considered environmentally damaging, the large volume of concrete waste generated during demolition at times makes it difficult for landfills to accommodate.

Special precautions or restrictions may apply to hazardous or contaminated materials such as radioactive waste or asphalt.

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2.3. Recycle Worn Out Blades, Bits and Wire

Recycling core bits, diamond blades and diamond wire helps to create a green jobsite.

Bits – if the barrel is still in good condition it can be re-tipped with new segments from the manufacturers. If the bit is no longer in good condition then the barrel can be tossed into the steel recycling dumpster.

Diamond blades and diamond wire can also be recycled due to their steel content

Any metal debris from a concrete slab, such as rebar can be removed from the concrete and taken to a steel recycler.

2.4. Properly Size Equipment for the Job

- Use appropriate sized generators, saws and drills for the needs of the work being performed.
- Reuse waste motor oil and hydraulic fluid as a fuel source in furnaces.
- Use biofuels like biodiesel or bioethanol to power diesel engines or trucks.
- Use biofuel generators and/or compressors.

2.5. Recycle Used Oil

If not disposed of properly, used oil can pollute land, water and infrastructure. Used oil can be recycled, with some contractors having large tanks on their premises to store it. This can result in thousands of gallons of oil being recycled each year. Companies have been set up to pick up the used oil from the yard, clean it and re-sell it to different industries.

Non hazardous used oil can be disposed of through a certified waste disposal company as oil for recycle or disposed of as a fuel source for shop heating.

Used oil or waste oil in most cases can be profiled and manifested as, “oil for recycle” by your local waste disposal company. This oil is typically burned as a secondary fuel source for waste incinerators or kilns.

Used oil can be recycled in waste oil heaters and waste oil boilers. Waste oil can be any oil that is drained from a vehicle or piece of machinery during equipment maintenance, such as transmission oils, hydraulic oils or combustible synthetic oils.

There are several companies that sell multi-oil heating systems. These waste oil heaters and boilers turn a used product into a valuable fuel. The cost of heating with waste oil is very low. The third party cost of waste oil collection is minimized. These heaters offer an economical and environmentally-friendly way to dispose of waste oil and are an ideal solution to heating shops and garages. Portable units are also available for use on jobsites or other well ventilated areas.

Recycling waste oil through on-site heat recovery reduces the risk of spills and contamination, the use of waste oils as a fuel source reduces the pressure on natural gas and fuel oil supplies.

A typical gallon of waste motor oil contains 153,000 to 180,000 BTU—about the same amount of energy as 18 kilowatt hours of electricity. These heating systems, boiler systems and storage tanks typically meet all EPA requirements for waste and oil recycling. The waste oil burners emit little odor and no smoke because the various proprietary components of the burners work together to achieve a clean burn. They are relatively easy to use and maintain.

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2.6. Recycle Fuel Filters

Used fuel filters can be stored securely in large drums that accommodate up to 300 filters each. These drums can be retrieved by recycling companies at regular intervals, allowing the contractor to recycle thousands of filters each year.

2.7. Perform Regular Maintenance

- Keep the equipment properly maintained to maximize fuel efficiency.
- Tune up the engines at regular service intervals.
- Have a proactive preventive maintenance program in place.
- Fit air pressure monitors in tires to be certain they are properly inflated.

2.8. Indoor Air Quality

Many construction sites have implemented a no smoking policy within the enclosure of the construction project.

3. Office-based Operations

Efforts to recycle waste material and promote a green working environment need not be limited to the jobsite. The office also provides scope for businesses to successfully run a green company, as many items of office equipment and stationary are recyclable and use of paper can be minimized by using electronic data.

The production of industrialized paper and plastic creates a negative impact on the environment, consuming energy, adding to landfill waste and pollution. Cutting contractors have the opportunity to recycle all paper and plastics consumed or used at their office locations by separating recyclables from non recyclables and loading them into special containers for recycling. Here are some examples of how cutting contractors can make their office-based operations green.

3.1. Recycle Paper

- Have a special trash can for the recycling of waste paper, including letters, notes or large construction drawings.
- Reuse unwanted printouts, where applicable, by printing on the reverse.
- Order recycled printer paper from suppliers.

3.2. Minimize Paper Use

- Cut down on unnecessary printouts where electronic files will suffice.
- Include notes or signatures on emails like, “be kind to the environment, think before printing this email” to encourage others.
- Use projectors and computer data sharing for paperless meetings.

3.3. Recycle Printers and Cartridges.

- When equipment is replaced or upgraded, recycle old items such as monitors, keyboards and printers.
- Use the free return packaging supplied with printer cartridges to recycle them.
- Have ink cartridges refilled when empty or buy refilled cartridges from suppliers.
- Use printer cartridges that contain soy-based ink.

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3.4. Recycle Packing and Shipping Materials

- Send pallets for recycling or make use of the wood.
- Reuse cardboard boxes or break down to recycle
- Reuse or recycle other packing materials made of paper, card, plastics or metals like aluminum or tin.

In general, green strategies make good economic sense for companies. Replacing incandescent bulbs with compact fluorescent lights when they require replacement can save businesses money through the conservation of energy and the lowering of electricity bills. Transportation for employees can often be as big of an impact as the office operations.

By following just some of the points raised in this document, cutting contractors can become green both on the jobsite and at the shop. Not only this, but employing some of these processes can save the company money too. It is important to observe as many green practices as possible during sawing and drilling operations to protect the environment and, in some cases, abide by state and Federal laws.

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