



Best Practice

Title: Cold Weather Concrete Cutting & Coring
Issue No.: CSDA-BP-024
Effective Date: Oct. 1, 2018

Introduction

The cutting and coring of concrete in extreme weather conditions, such as temperatures below freezing, can have cost and/or schedule implications. The professional concrete cutters may need to perform work in a variety of weather conditions. The purpose of this document is to identify practical strategies for cutting and coring concrete in cold weather (below freezing) temperatures.

Feasibility

Cold weather concrete cutting and coring is generally less efficient and more costly over temperate conditions. In northern regions of the USA and Canada, significant times of the year can have projects scheduled during below freezing temperatures.

- Not all the outdoor projects can be completed in the short summer months. Some projects will have to be performed in winter months.
- Some projects pop up from unexpected circumstances and are not part of a long-term planning process.
- Today's highly trained professional concrete cutter is a specialized trade and not a seasonal (summer) job.

As a long-term strategy, planners can make decisions as to what to schedule in the warm summer months and what will need to be worked on in the winter months. This planning process should make considerations for safety and for increased cost impacts of the project.

Safety

Dangers in cold weather concrete cutting and coring include (but are not limited to):

- Declining temperatures. The working temperatures can drastically impact the work performed. Consideration should be made for the entire work timeframe from the time the equipment and personnel leave the shop to the time they return.
 - Increased risks to crew include frostbite and hypothermia.
 - Frostbite is caused by the freezing of skin and tissues, which can cause permanent damage up to and including amputation.
 - Hypothermia is caused by cold weather exposure lowering the core body temperature (normally around 98.6F) to temperatures less than 95F. This can be deadly.

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- Other weather conditions such as wind, freezing rain, ice, snow and low light/visibility conditions (or a combination of any of these). These conditions affect the “feels like” temperature and can quickly accelerate the effects of cold weather exposure.
- Travel to and from the jobsite in winter weather conditions.

Compromises, Alternative Solutions and Substitute other Technologies

There are many considerations in comparing one solution to another, for example wet cutting vs dry cutting to minimize use of water in freezing temperatures. Wet cutting may be considerably faster, so the tradeoff is minimizing water to minimize ice created on the jobsite, or having the job done faster to minimize the time the crew is out in the elements. Each jobsite will have many unique considerations, so proper planning for the best solution for that specific job in the weather conditions at that time is crucial.

Shelter

- Temporary shelters (aka weather shelters) can provide physical protection from some of the elements. Safety considerations for fume/exhaust control, Respirable Crystalline Silica (RCS) dust levels and space heaters to regulate temperatures must be noted.
- Wind barriers in cutting zones can block wind which eliminate temperature drops dues to wind chill. Wind barriers also help prevent additional dust from becoming airborne.

Heaters

- Portable space heaters or heaters to thaw an area prior to work.
- Engine block heaters.
- Tank heaters on water and slurry tanks.

Equipment

- Extremely cold temperatures can damage unprotected equipment/machinery and make certain materials brittle and fragile.
- Cutting and coring equipment with a cab to protect operators from the cold.
- Additives to the vehicle fluids such as hydraulic fluids, engine oil and fuel additives, to increase the lower temperature range of the fluid to prevent freezing.
- Larger equipment onsite can help handle larger pieces of concrete to minimize the cutting and handling time in the bitter cold cutting smaller pieces with smaller equipment.

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- Dry cutting when possible.
- Using a closed loop cooling system with anti-freeze for sensitive hi-cycle drills and saws that use the blade/bit water to also cool the tool.
- For equipment that uses a water feed system to keep it cool, drain and flush out the water at the end of each use.
- Consider using recycled biodegradable antifreeze if the water is not recirculated. This will minimize environmental impact.
- In extreme cold temperatures, some plastic parts on equipment can become very brittle. Exercise caution when handling the equipment, loading and unloading. This will minimize potential damage to the plastic components that are made fragile in the cold temperatures.

Dust Control

Additives to the water like antifreeze allow colder weather use.

Heat the water before it is used.

Immediately clean up the slurry generated to minimize ice buildup on the slab surface.

Clothing

Select proper outer gear for wet mist associated with wet cutting and coring.

Select proper clothing for cold, wet and windy conditions and choose clothing that wicks sweat away to keep the body dry.

Keep a duffle bag in a truck with an extra set of clothes, gloves, and socks in case of getting wet on the job.

Administrative Controls

Reduce worker hours outside in the elements. Provide more breaks in a warm atmosphere to allow operators to warm up.

More pre-job planning to minimize time in the field.

Schedule work during the warmest part of the day (as feasible).

Work in pairs to monitor fellow operators.

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Let engines on generators and powerpacks run through breaks to keep fluids and systems warm for use.
Consider leaving the water running with full pressure to keep hoses from freezing and splitting.

This document was designed as both a comprehensive overview of best practices for cold weather concrete cutting and an outline of factors such as time and equipment that can increase cost. Those performing jobs in the cold are encouraged to research additional information pertaining specifically to their job site's conditions including variations of climate, temperatures and other weather conditions.

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