

BUILDING SNOW CAVES

There are many different types of snow shelters used throughout the world, but one of the most common and easiest to construct is the snow cave. Almost any improvised tool can be used, even hands if nothing else is available. But for a planned and comfortable cave a shovel is best to use. There are four main steps to follow in building a snow cave. These are; Choosing a site, tunneling in, shaping the cave, and adding finishing touches.

Choosing the site

When choosing a site for a cave one of the most important considerations is the snow depth. A depth of at least 4 or 5 feet is helpful to start with. Many areas in the world do not commonly have this depth of snow available. To overcome this problem, snow must be formed into a large pile. This pile should be designed large enough to accommodate the number of people that the shelter will house. To form the snow pile, begin shoveling or moving snow onto a site that will provide a flat and stable base. Continue adding snow until a rounded pile is formed at least 4-5 deep and as long and wide as it needs to be for the number of people it will accommodate. It is better to start with more snow than you think you might need. The newly formed pile needs to be left undisturbed for at least an hour before any digging is attempted. This time allows the snow crystals to begin to bind together and gives the snow cave strength and stability. This binding time varies depending upon the type of snow, the moisture content, and the air temperature. It is possible that in some conditions, such as, granular or corn snow that the snow crystals will require a longer time to form this bond and in some cases not form a bond at all. In these situations other types of shelters need to be considered. When using this method, smaller shelters will be easier to build. If there is a large number in a group, it will be more effective to build several smaller caves.

When the natural snow depth is at least 4 or 5 feet, choose a site free of any avalanche danger. Look for a drift or swail near ridges or trees. Try to arrange the entrance to the cave so that it is on the leeward side of a slope. This will offer additional protection from the wind.

Preparing to dig



Before the actual digging begins make sure you are wearing the proper clothing. This includes layers with a waterproof shell. Remember; dry is warm. Heavy digging can be done with a large scoop shovel. Smaller avalanche shovels work well also. In an emergency situation where a shovel is not available, use whatever you can improvise, including your hands. A small cooking pot, a snow shoe, ski or even a signal mirror will work.

Tunneling in

In deep snow begin by digging a trench downward into the snow. As

you dig place the snow that is being removed from the trench onto the roof area of the cave. In these conditions make the trench as deep as you are tall. The next step is to begin tunneling in. At a point at about knee level make the entrance. Make the tunnel slightly wider than your body. If the terrain and snow depth are adequate, tunnel at a slight upward angle. Ideally the cave end of the tunnel should be at least a foot above the entrance, this will help prevent warm air from escaping the shelter. If possible make the tunnel the length of your body. At the upward end of the tunnel hollow out a space as large as your body. Moving the snow becomes a major task at this point. Use the shovel in front of your body to dig in. As you move forward use your feet to move the snow into the tunnel and out of the entrance. Now you are ready to begin shaping the cave.

Shaping the cave

The minimum thickness of the cave walls should be 12 inches. The thicker the walls the more stable the structure and the better it will insulate. The ceiling and the walls of the shelter should be dome shaped and smooth and should be large enough for you to sit upright. Try to eliminate any sharp edges or ridges on the walls and ceiling of the cave. Initial shaping can be done with a shovel to do the bulk of the work. Final shaping is best done with a gloved hand. This shaping will prevent water dripping problems as the temperature in the cave rises.



Finishing touches

An elevated sleeping platform is the most important feature you can add to your shelter. This allows you to be nearer the warmer air in the upper part of the cave. Another necessary feature is the ventilation hole which can be made with a stick, ski pole or other object. This hole should be made in the top and be about 2 inches in diameter. This helps to eliminate carbon monoxide if stoves or candles are used and carbon dioxide buildup from your own breathing. Check the vent hole at regular intervals to prevent it from becoming clogged. Leaving a stick or ski pole in the hole is a good idea. To clear the vent hole just wiggle the inserted object. Make a shelf for a candle. One lighted candle can increase the air temperature in a small cave by as much as 20 degrees or more. Others shelves and platforms can be created for gear and equipment. The entrance to the cave can be blocked with a snow block, pack or other gear. This will further help to reduce air movement and increase the temperature inside.



On occasion during the construction of a snow cave, especially in granular snow, a collapse can occur. It is a good practice to build caves in teams of two. During the construction, one person should always remain on the outside. In case of a collapse the outside person can then rescue the person digging. It is uncommon for a snow cave to collapse after construction, especially after the temperatures drop at night. The cold

temperatures tend to increase the overall strength of the shelter.

The ceiling of a snow cave can drop as much as 1-2 inches per day. This occurs because of normal settling of the snow pack. During a heavy storm the settling can increase drastically. When this occurs just reshape the inside of the cave. Always keep your shovel or digging device next to you in a snow cave. After a storm you may need to dig your way out.

Emergency Snow Caves

In an emergency, snow caves can be created quickly by digging into a snow bank or drift. Eliminate the tunnel and dig a compartment so that it is large enough inside for you to sit upright. Place your pack in front of the entrance hole. Use evergreen bows or other natural materials to insulate yourself from the ground. Use your pack as an emergency bivy sack and light at least one candle. If you use a candle make sure you have a vent hole or adequate ventilation. If you think people will be out searching for you, make the site as visible as possible from the ground and the air by placing clothing, sticks or stomping an unusual pattern in the snow. Remember when you are inside the cave your ability to hear what is happening outside will be reduced to almost nothing.

The temperatures may drop and the storms rage but if you follow these simple steps and carry basic emergency gear you can be safe and secure in your home in the snow.