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**INTRODUCTION TO ANCHOR SYSTEMS**

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An anchor system is the life-protection setup we use to try to ensure that we stay alive and avoid serious injury. In this section, we will teach you the components of anchor systems, such as knots, materials, and techniques, and then we will teach you how to put the components together into a complete anchor system.

Anchor systems are used in a variety of places. A **slingshot anchor system** is always set so that the rope hangs suspended from the cliff edge; the rope goes from the belayer up through the anchor system and back down to the climber. A **top belay anchor system** means that the belayer is sitting or standing at the top of the climb, with the anchor system above and/or behind. Slingshot anchors and top belays are both examples of **toprope anchor systems**, in which there is an anchor system above the climber. A **rappel anchor system** is used for rappelling, and may or may not be appropriate for top roping. A **belayer anchor** prevents the belayer from losing control of the belay. A **lead belayer anchor** is used when the climber is leading; lead belayer anchors are discussed in the AMC Lead School.

All anchor systems should be what we call **bombproof** or **bomber**. That is, they should be able to withstand “the force of a bomb being detonated.” Of course, anchor systems can’t literally withstand that much force, but the term is widely used to describe figuratively how strong the anchor system should be.

**ANCHOR PRINCIPLES**

We will teach you to build anchor systems that conform to the following principles. These principles are adapted from American Mountain Guides Association (AMGA) literature, and have been presented by John Long in his book, *Climbing Anchors*.

Anchor systems should be **Solid**, **Redundant**, and **Equalized**, and allow **No Extension**. The acronym **SRENE** (pronounced “serene”) may help you to remember these principles. (The AMGA acronym is ERNEST—Equalized, Redundant, No Extension, Solid, and Timely. Timely refers to the concept of setting the anchor at the right Time, such as before you run out of rope or pass a good belay stance, and setting the anchor fast, due to weather or injury concerns.)

Anchor systems include one or more anchor points, each of which should be absolutely reliable. Anchor points should be **Solid**. If the anchor point is a tree, it should be a big tree, deeply rooted, with no chance of being pulled out of the ground. Artificial fixed anchor points such as bolts should be inspected to verify that they cannot come out, and should be backed up whenever possible.

Anchor systems should be **Redundant**. You should construct anchors so that if any one component gives way, there is a backup that will hold the remaining components of the anchor system.

Anchor systems should be **Equalized**. The weight of the anchor system should be spread among these redundant parts so that each one is taking an equal portion of the force. If you are using two trees, for example, each tree should hold one-half the weight of the system, and therefore one-half the weight of the climber or rappeller. Otherwise, you might as well just use the loaded anchor point. Lack of equalization leaves anchor points susceptible to shock loading, which can cause complete anchor failure.

Anchor systems should prevent extension (**No Extension**). Ensure that if one part of the anchor system fails, the remaining part will not be shock-loaded. This sudden loading may cause the rest of the anchor system to fail.

In some settings, such as in the back-country, you may find yourself forced to use less than optimal anchor systems. For example, you may decide while climbing a long multi-pitch to trade off your normal, bomber, multi-part, equipment-intensive anchor system for speed, so that you get off the climb before dangerous darkness sets in. Hopefully, these will be informed and calculated risks you will take. However, there is no excuse for skimping on a toprope anchor (slingshot or top belay). Toprope anchors are typically used for beginners, social climbing, outings, or climbs that are too hard or dangerous to lead.

Follow the above anchor system principles as closely as you can. However, remember that you may have to compromise in building anchor systems due to the unique nature of each climbing area you visit. In these cases, you must make a determination of whether or not you can accept the risk that goes with violating these principles.