

Failure Modes of Snow Anchors, Part III

A number of different types of snow anchors are available to the climbers and mountain rescuers, and many of these involve burying hardware such as pickets or flukes to create the anchor. All snow anchors rely on the mechanical properties of the snowpack to provide strength, but because snow conditions vary considerably, it is not surprising that anchor strengths also vary significantly. Furthermore, because anchoring hardware can be buried in different orientations, an additional variation can exist.

Slow-pull testing was performed on various types of snow anchors in various locations throughout the western United States over several seasons, and additional data were provided from testing performed in New Zealand. The data to be presented will focus on pickets and flukes.

For each anchor tested the strength of the snow was measured, the strength of the anchor was measured, and the failure mode was noted. The failure modes of these anchors are described and correlated with features within the snowpack, and recommendations are made as to which anchor types are best suited for use in different types of snowpacks. Depending on the needs of the situation (e.g. is speed more important than strength?), additional recommendations are made regarding the most suitable anchor type.