

SRC Policy on Bolting Support

Approved by Committee October 2016

Background

The Sydney Rockclimbing Club (SRC) has a history of supporting the bolting of rock climbing routes, providing financial support, components, installation of a combination thereof. This sponsorship is intended to enable safe access to climbing terrain that would not otherwise be safe or accessible. The SRC Membership resides in a region where soft, sandstone is prevalent and lacks naturally protectable features. Therefore, bolting is necessary for safe climbing. Further, Sydney is a region that has a unique type of bolting tradition. This tradition is often referred to as ‘carrots.’ These are machine bolts that are either hammered or glued into the rock. A climber places a removable hanger onto the bolt when needed for protection. This has been a prevailing bolting tradition in the Sydney Region, but its use is limited or non-existent in other regions of Australia and globally.

The SRC sponsored a broad-based survey in late 2015-to-early 2016 that touched upon the full spectrum of SRC member needs to include climbing safety. The findings from this survey revealed that nearly 50% of all survey respondents expressed concern about the safety and quality of existing bolt practices. Concerns over ‘carrots’ were specifically called out. In response, the SRC Committee called upon the SRC membership to provide any safety/quality information on bolt practices. These calls for membership and public comment were conveyed at monthly meetings in early 2016 and also via the SRC’s monthly newsletter, ‘Thrutch.’ This was accompanied by a review of the peer-reviewed, scientific literature.

Input from membership combined with a review of the scientific, peer-reviewed literature resulted in two, independent studies on ‘carrots’ (1, 2). Both studies independently found that the ‘carrot’ system failed at forces well below the EN959:2007 standard (3). The EN959 standard, published by the UIAA Safety Commission, is the only standard for fixed rock climbing protection in the world and therefore serves as the *de facto* safety standard for fixed protection safety. In these studies, brackets of all brands and applied on ‘carrots’ uniformly failed at forces far below the strengths the manufacturers had rated them at. ‘Carrots’ uniformly failed at shear forces at or below factor one fall forces. The only bolt type that performed worse were coach screws. The ‘carrot’ system was found to be particularly vulnerable in soft substrates, like sandstone.

The marine environment is a particularly sensitive situation, and Sydney is situated on the Southern, Pacific Ocean, with many climbed cliffs. It has been found across a range of marine environments that bolts that are safe in non-marine environments fail in marine environments (4, 5).

An incident in 2016 in the Blue Mountains occurred where a U bolt pulled cleanly out of its bored hole. The glue used to install the bolt was not correct; it did not solidify and chemically adhere the bolt to the rock. Fortunately, there was no fatality. It has been learned via informal conversations that standard, hardware epoxies are sometimes used to install bolts regionally.

SRC membership body concerns combined with these scientific findings and events therefore has forced a review and change of the SRC policy on bolting.

Policy

The safety of the SRC membership and of all climbers is paramount and shall not be compromised for any reason. The SRC Committee review of this specific membership concern, combined with available, independent scientific literature finds that 'carrots' present an unreasonable risk and potential for harm to SRC members. They further present a potentially real liability to the SRC. Therefore, the SRC, from the date of this policy forward, will no longer provide material support for the 'carrot' system of bolting.

The SRC Committee recognizes its role and social responsibility to promote safe climbing access. Therefore, the SRC will continue to support removal and replacement of existing bolts, including 'carrots', with bolts that meet the EN959 standard. The SRC will also continue to support establishment of new routes, applying the same standard as a second priority. These bolts shall be chemically adhered using the highest standard glue recommended by EN959 compliant bolt manufacturers. As of the date of this policy, no uniform UIAA policy on glues exists. Finally, bolts placed in the marine environment will shall only be titanium, consistent with UIAA recommendations (6). Further, SRC will discourage substandard bolting practices more broadly via its social presence.

The process and procedures for requesting bolt replacement or installation will be laid out in a separate procedures document.

For questions on this policy, please contact the SRC Access and Environment Officer

References

1. Pircher M. Testing of removable bracket protection system for rock climbing. *Journal of Testing and Evaluation*. 2011;39(6).
2. Law MH, S. Testing of rock climbing anchors in weak sandstone. *Sports Engineering*. 2015;18:21-8.
3. Federation TTMaC. Mountaineering and climbing equipment: rock anchors. Bern, Switzerland: UIAA; 2013. Contract No.: UIAA 123_2.
4. Karalis DM, NE; Pantelis, DI. Failure analysis of a rock anchor made of stainless steel in marine environment. *Engineering Failure Analysis*. 2012;19:123-30.
5. Sjong AE, L. Marine atmospheric SCC of unsensitized stainless steel rock climbing protection. *Journal of Failure Analysis and Prevention*. 2008;8:410-8.
6. Federation TICaM. Watch your anchor! Corrosion and stress corrosion cracking failure of climbing anchors. Bern Switzerland: UIAA; 2015.