

SUMMARY: SHEAR STRENGTH OF ELDO ROOF-ROUTE BOLTS

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Overview

Bolts that were recently removed from the well-known roof routes in Eldorado Canyon State Park were loaded to failure in shear on 10/23/15. Nearly all bolts tested were 1/2 or 3/8 inch 5-piece (hex) or 3/8 inch threaded wedge bolts (wedge). These were loaded in a test fixture that imposes nearly pure shear close to the hanger attachment point.

Test Results

Loads at failure are summarized below.

Number	Route	Nominal size/style	Load at failure (lb)
1	Wisdom	3/8 wedge	2741
1	Lip Sync	3/8 wedge	3903
1	Psycho	1/2 hex	8564
2		1/2 hex	9103
3		1/2 hex	9281
4		3/8 wedge	3774
5		1/2 hex	7906
1	Downpresser Man	1/2 hex	9042
2		1/2 hex	9466
3		1/2 hex	8977
4		1/2 hex	8945
1	Guenese	1/2 hex	9200
2		1/2 hex	9119
3		1/2 hex	8974
1	T2	1/2 hex	8481
2		1/2 hex	9026
1	Hands in the Clouds	1/2 hex	9648
2		1/2 hex	8706
1	Fire and Ice	3/8 hex	6365
2		1/2 hex	9740
3		1/2 hex	9012
4		3/8 hex	5474
1	Evangeline	1/2 hex	9117
2		1/2 hex	8872
3		3/8 wedge	3826
4		3/8 wedge	3852
5		3/8 wedge	3604

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