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## DESIGN AND CONSTRUCTION OF ROCK CUT SLOPES FOR QUARTZITE ROAD, BOULDER CITY, NEVADA

*by: Jim Werle and Al Stilley  
Converse Consultants*

**ABSTRACT:** Quartzite Road consisted of about 4,000 feet (\_\_\_ meters) in length of 2-lane roadway located in generally steep and mountainous terrain in Boulder City, Nevada. Required rock cuts into the hillsides were approximately 30 feet (\_\_\_ meters) or more. Our study was performed to determine the allowable cut slopes for the road design. Our work consisted of reconnaissance level geologic mapping, rock discontinuity line mapping of outcrops in proposed cut areas, observations of existing cut slopes in the area, drilling three rotary test borings, laboratory testing on rock cores, engineering and geologic analyses and providing design recommendations. The majority of the rock along the alignment consists of an intrusive pluton of medium to coarse grain quartz monzonite to granite. Four primary joint sets were found to exist in the rock mass. Stereographic wedge failure analysis was performed using the collected joint data to determine stable cut slopes. From this analysis, recommended slope ratios were ¾:1 (horizontal to vertical) for northwest, north, northeast, east and southeast facing cuts and 1:1 for west, southwest, and south facing cut slopes up to a maximum height of 30 feet. For slope heights exceeding 30 feet or for slope steeper than those presented, a pattern of rock bolts was recommended. The analysis addressed only gross stability of the cut slopes (potential wedge failures) and not rock fall due to raveling of the slope face from weathering over time.