

ABSTRACT

Rockslope Engineering Challenges for Locating High Power Transmission Line Towers on Dip Slopes of the Horse Spring Formation, Clark County, NV.

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Design and construction of roads and foundations on steep dip slopes in bedrock creates challenging rockslope engineering problems because of the kinematic potential for failure into the rock excavations. The Rainbow Gardens Geologic Preserve is a unique geologic feature located approximately 20 miles northeast of downtown Las Vegas, NV. Tertiary rock members of the Horse Spring Formation form a mixture of very weak to strong limestones, sandstones, shales, gypsum deposits and conglomerates. Structures of these units strike en echelon to the northeast and dip steeply to the southeast. Presently Los Angeles Department of Water and Power (LADWP) owns a high power transmission line that traverses prime terrain in a pass formed from the shoulder of Lava Butte and the steeply dipping limestone slope of the Horse Spring Formation. Nevada Power Company (NPC) has proposed to construct the Harry Allen Mead (HAMD) 500 Kv power transmission line, NPC's largest, which will parallel LADWP's present line. However, because the pass holds LADWP's present line, NPC's towers and ancillary structures must be constructed on the dip slope of the adjoining ridge. These dip slopes create rockslope design problems in that the slopes dip unfavorably into the excavation of the proposed structures creating potentially large planar failures and rockfall. Construction of the tower pads and access road will necessitate a vertical backwall that will exacerbate the stability of the rock cuts. To control the stability of the backwall, NPC's consultants have proposed installation of sub-vertical dowels behind the proposed cutlines followed by preshear blasting.