

عنوان مقاله:

stability analyses and rock support design of karun 3 dam & h.e.p.p. plunge pool

محل انتشار:

سمپوزیوم برآورد عدم قطعیت در مهندسی سد (سال: 1384)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

The Karun3 dam & HEPP is one of the largest and most complex hydro-electric power project ever built in Iran. This 205m high double curvature concrete dam is comprised of chutes (two bays), orifices (two bays) and crest spillways each of which run a high risk of developing scouring at the plunge pool foundation because of the characteristics of the discharging structures employed in the form of high velocity jets and due to the jointed weak layers, which are prone to weathering, at the base of the Karun River. The generated flow energy should also be dissipated through the plunge pool constructed for this purpose at the downstream of the dam body. For this reason the design and execution of the plunge pool was considered to be critical in the stability of the dam body structures. This was because a large portion of the plunge pool was directly responsible for support of the dam abutments and the chute structure. Any damage to this structure would transmit the circumstances to the dam body. Extensive studies had to be performed for the modes of possible failure, volume and type of the support requirements, and optimization considerations based on the set criteria. For the supporting system of the plunge pool rock slopes, the initial design allowed for the use of 6576 tendons (each tendon 27 strands, 25 m to 50 m length, with a total length of 265000m). Due to many practical constraints, the huge economical involvement, and level of safety factors requirements, a thorough and extensive review of the input parameters and design procedures were undertaken. The studies revealed that the total area can be stabilized by as many as 3257 anchors of type A, 4866 anchors of type M (coated with epoxy), and 2451 anchors of type K. Constraints and investigations are presented in the paper.

کلمات کلیدی:

Karun 3 dam, Plunge pool, Limit equilibrium, Anchors, Sliding block analyses

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