

عنوان مقاله:

Imjection of arch 5-6 of daniel-johanson multiple arch dam

محل انتشار:

اولین کنفرانس ایمن سازی و بهسازی سازه ها (سال: 1381)

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خلاصه مقاله:

Cracking is one of the most serious problems affecting the concrete dams and grout injection has proven an efficient repair method. The Daniel-Johnson dam is the largest multiple arch dam in the world. Since the construction of the dam, numerous grouting campaigns have been carried out in order to eliminate water infiltration from cracks, and from the concrete-rock interface. However, in some cases, the injection provoked the propagation of the existing cracks or the initiation of new ones. For this reason, as well as to verify the contribution of an injection to the safety of the dam in 1985 Hydro-Quebec applied a moratorium on all future injection work at the Daniel-Johnson dam. Therefor since 1986, Hydro-Quebec has been carrying out an applied research project on the performance grouting of the cracks for Daniel-Johnson dam, specially for arch 5-6. The arch 5-6, located to the right of the central arch, revealed the presence of two plunging cracks. Two grouting campaigns had previously been carried out in 1976 and 1982, in this arch, in order to reduce water infiltration from the plunging cracks. Between 1987 and 1992, water infiltration in the arch 5-6 increased from 5 l/s to 15 l/s. Subsequently, an extensive investigation program was carried out to determine the exact location, extent and characteristics of the cracks using new technologies. Further emphasis was put on the research program to identify a grouting procedure that would be safe and durable. This paper presents results of laboratory research program and the injection campaign of arch 5-6. In the first part of project, different types of cement, with different water-cement ratios with or without admixtures, were tested at 4, 10 and 20°C. The large number of variables allowed us to assess their influence on the grouts' rheological and physico-mechanical properties. Then, the selected products were injected in instrumented concrete slabs (2.62 m x 1.42 m x 0.40 m). This step permitted to evaluate the quality and efficiency of the grouting products, equipment and procedures. For the second part of project, this paper describes the results of the investigation and some details of the grouting campaign which .carried out in January 1999

کلمات کلیدی:

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