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Journal	Advanced Materials Research (Volumes 250 - 253)
Volume	Advanced Building Materials
Edited by	Guangfan Li, Yong Huang and Chaohe Chen
Pages	1217-1221
DOI	10.4028/www.scientific.net/AMR.250-253.1217
Citation	Jin Xing Lai et al., 2011, Advanced Materials Research, 250-253, 1217
Online since	May, 2011
Authors	Jin Xing Lai , Jia Sun , Chi Liu
Keywords	Construction Technology , Loess Tunnel , Quality Monitoring , Waterproof and Drainage
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Advanced Materials Research Vols. 250-253 (2011) pp 1217-1221
Online available since 2011/May/17 at www.scientific.net
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doi: 10.4028/www.scientific.net/AMR.250-253.1217

Quality Monitoring for Waterproof and Drainage of Loess Road Tunnel

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Key words: waterproof and drainage, construction technology, quality monitoring, loess tunnel

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Introduction

The waterproof and drainage system adopted in mountain tunnel is actually artesian drainage system and the waterproof is only auxiliary system. After the water leakage in tunnel, people think from instinct that the waterproof facilities have problems and constantly pursue improving the waterproof construction quality with the neglect of collective drainage quality requirements. Because the mountain tunnel structure is designed based on the action of collective drainage system without influence of groundwater pressure on lining, so when the failure of collective drainage system happens, the harmful deformation will be produced in lining concrete by large hydraulic pressure. By contrast, the damage caused by the logjam of collective drainage system is much larger than that caused by the breakage of waterproofing system, the inspection of fault point and the renovation and remediation are also much more difficult. The research center of waterproof and drainage construction technique along with quality control in Tianshui to Chankou expressway tunnel regards the construction qualities of collective drainage and waterproof as emphases.

General situation of project

A. Geographical location, landform and physiognomy

The automobile specialized secondary highway from Tianshui from Chankou is located in central region of Gansu province, which is the economic route connecting the capital Lanzhou and major industrial city Tianshui with overall length for 191.655km. The area passed by route belongs to the south of Longxi loess plateau controlled by tertiary ancient terrain with geomorphic development of beam, shimao and ditch.

The covering layer of quaternary eolian loess is thin with the thickness of 10~15m, and the underlying tertiary brownish red mudstones have exposure of older strata in partial sections covered by quaternary eolian loess. The areal geology constructing movement is obviously controlled by three systems, i.e. east-west construction system, north-west construction system and circle

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